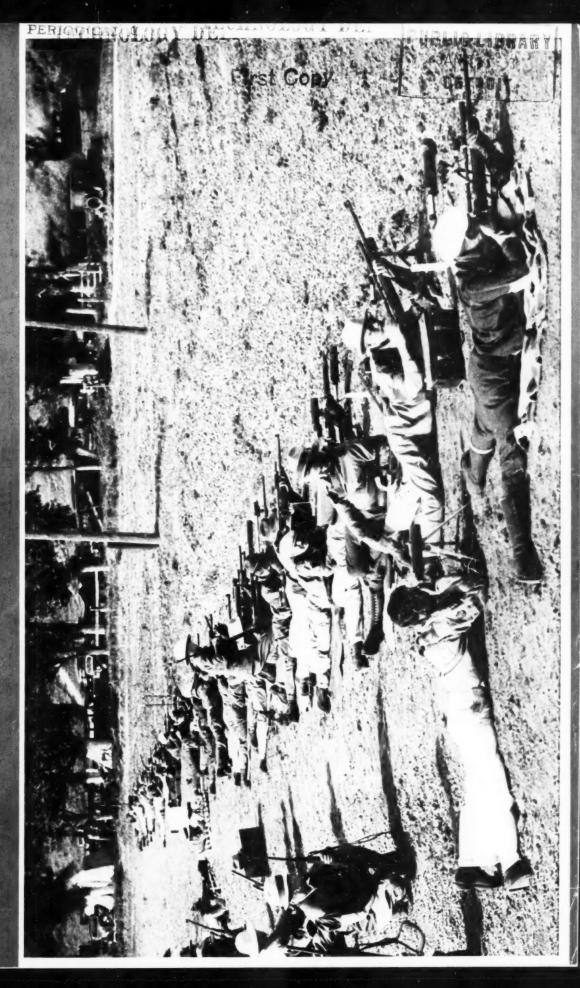
ANDRICAN BIRLEMAN



GENTLEMEN! LET'S LOOK AT
THE RECORD

PETERS TACKHOLE .22's MID-WINTER SMALLBORE

Kenneth Recker wins both Mid-Winter and Southeastern Smallbore Rifle Matches – Peters takes 13 out of 17 Firsts

One of the most oweeping victories ever to be seconded took place at St. Penenburg. Plands, March 5 to 7. Penen Tackhole 223 won the majority of all the events as well as taktog second and third in a large perconage of the marchin. This record of Penen Tackhole tog second and third in a large perconage of the marchin. This record of Penen Tackhole 23% disassess sets can be as SWEEP THE NATIONAL RIFLE CHAMPIONSHIP



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ATACKHOLE" TAKES NINE
FIRSTS AT "PAN AMERICAN"

DALLAS, Texas, Sept. 26—
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HOMER JACOBS

takes Eastern Small Bore
Rifle Championship with

"TACKHOLE"

TACKHOLE

Lady Champione RELIES ON

PETERS 38 SPECIAL "TARGET" WAD-CUTTER

Rans 19 Consecutive
Tens—Setting New
Record of 199 x 200

And Tens of the Security of the Sec

PETERS "TACKHOLE" HANGS UP ANOTHER SPECTACULAR RECORD

W. H. Womack, Shooting "Tackhole", Nabs Texas State Championship as Peters Wins 6 out of 9 Firsts, 7 out of 9 Seconds, and 6 out of 9 Thirds!



AT CAMP PERRY SHU

Series for the first of t

NEW WORLD'S RECORD
OVER POLICE COURSE
ST. PETERS .38 SPECIALS

WINS! WINS! WINS! THAT WAS THE STORY OF PETERS IN 1937!

Yes! It takes good shooting to win an important national event. But it takes higher accuracy ammunition to win consistently. And that's what Peters contributed in 1937—

AND IN 1938

new high standards of manufacture promise results more spectacular still

Watch the coming events! Expect new Peters records! And when you step up to the firing line... be sure you have "the ammunition that inspires confidence."

THIS YEAR GO ALONG WITH

DETERS PIND

PETERS CARTRIDGE DIVISION, REMINGTON ARMS COMPANY INC., DEPT. A-26, BRIDGEPORT, CONNECTICUT





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CONGRESS CONVENES THIS MONTH—

 WITH the assemblying of the regular session of Congress on January 3rd, shooters of America are reminded of the statement made by Attorney General Cummings early in October when he pledged "a finished fight" for a federal law requiring the registration of all firearms.

Because of other pressing legislation no anti-gun laws were introduced during the special session just closed, but it is evident that Mr. Cummings will demand of the new Congress prompt action on the registration bill he has proposed.

"I submitted such a (registration) bill to the present Congress. So far I have not been able to secure an open hearing upon the measure. But I propose to fight this thing through to a finish despite the pistol manufacturers who have so far blocked every honest attempt to deal with this subject."

That is the verbatim statement of the Attorney General, according to the Associated Press report of his speech

before the International Association of Police Chiefs at their Baltimore Convention.

The Attorney General's previous efforts to secure drastic federal firearms laws have been killed by the active and audible objections of the sportsmen of America. Our congressmen and senators know where the objection to anti-gun legislation has come from and they very probably will resent the insinuation of the Attorney General that they have permitted their votes in Congress to be swayed by a mythical, non-existent pistol-manufacturers' lobby.

Once again the members of the National Rifle Association will need to be represented by their officers in pointing out to Congress the hidden dangers of such a plausible legislative scheme to end crime. Once again we ask every active member to use the coupon below to say: "The right of the American Citizen to bear Arms shall not be infringed."

Start the New Year by signing up a new N.R.A. member.

National Rifle Association, 816 Barr Building, Washington, D. C.

GENTLEMEN:

I endorse the N. R. A. idea of presenting to Congress and the public the views of honest gunowning citizens with respect to Mr. Cummings' Federal Anti-Gun Proposal.

I have also persuaded another good American to join the N. R. A. and thus take an active, intelligent part in this new campaign to save the sportsman's guns from registration, confiscation or further taxation.

His remittance of \$\sum \\$5.00 for 2 years, \$\sum \\$3.00 for 1 year is enclosed.

Application endorsed and forwarded by

...... Status: Annual Member Life Member

THE NEW MEMBER

City.....State.....

Shoot in the

MATCH OF THE MONTH

For FEBRUARY

· RIFLE · :

No. 6—The Prone Any Sights 50-Foot Rifle Match. 100 Shots.

Here's a chance to prove your ability to "burn them in." It takes a good score to win but everybody with a score of 990 x 1000 or better receives a percentage medal. Jule Leiweke of St. Louis won a year ago.

· PISTOL · :

No. 11—The Slow Fire 20-Yard Pistol Match. 40 Shots.

The slow fire experts have their innings in this event. Any ".22 pistol or revolver" with open sights, barrel length less than ten inches and trigger pull of two pounds or more may be used. Percentage medals for scores of 348 x 400 or better. Edward Winn of Winchester, Mass., won in 1937.

ADDED BY REQUEST • =

No. 30—Any Sights 75-Foot Championship Rifle Match.

There has been a demand from rifle shooters having facilities for 75 feet, for a three position match at that range—an open event with twenty shots prone, twenty shots kneeling and twenty shots standing, with any sights.

The conditions for this match were written by the shooters themselves—your response will determine if they were correct.

OTHER MATCHES FOR FEBRUARY

• IF neither of the "Matches of the Month" strike your fancy, there are a number of other specialized events that may be of more interest to you. Pick out an interesting match to shoot during February. The entrance fee for each event is \$1.00, except Match No. 9.

No. 7-Standing Metallic Sights Free Rifle Match.

Consisting of 50 shots from the N. R. A. standing position at 50 feet. This is one more opportunity to use your free rifle, this time without a telescopic sight. Percentage medals for scores of 440 x 500 or better.

No. 8-Eagle Rifleman's Match.

Consisting of 20 shots prone, 20 shots kneeling and 20 shots standing, with any sights, all at 50 feet. This match is open to shoeters who have earned the rating of distinguished gallery expert or distinguished small bore

expert. If you are not already a distinguished rifleman ask for complete information on the proper method of attaining this rating.

No. 9-Women's Rifle Championship.

Consisting of 50 shots in the prone position, metallic sights, all at 50 feet. One set of medals will be awarded to the competitors in this event who have a tyro status and a second set will be awarded to those who have previously won a medal. Entrance fee 50c

No. 10-Timed Fire 50 Foot Pistol Match.

Consisting of 40 shots. This is another opportunity for the pistol shooter to unlimber his .22 caliber arm. Percentage medals will be awarded for scores of 360×400 or better.

Use the Special Entry Blank on the Last Page of This Issue

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Fifty Xs. Five consecutive 10-shot groups, 100 yards, machine rest, with the new Winchester HS-38 Precision EZXS in a Winchester New Model 52 Heavy Barrel Target Rifle with Marksman stock. Every shot an X. The groups average .69 inch inside measurement, and .91 inch center to center of outside shots.

AMAZING NEW TARGET ACCURACY WITH WINCELET ACCURACY WITH

SMALL BORE PRECISION HS-38 EZXS

THE new Winchester EZXS small bore target cartridges, shown above in their new box and with representative 100-yard machine-rest accuracy-test groups, are the achievement of one of the most intensive efforts at improvement ever centered upon the .22 Long Rifle Lesmok cartridge.

In Winchester's extensive testing of these new cartridges, more than 100 different Winchester New Model 52 and Old Model 52 Rifles were used.

One test was made using five different rifles—four New Model 52s and one Old Model 52. Each fired 50 shots in five 10-shot groups, in the manner illustrated above, which showed a mean average of .85 inch inside measurement, and an average of 1.07 inches center to center of outside shots, for the entire 250 shots. All testing was done from Woodworth cradle-type machine rest.

Additional tests on Winchester's 200-yard indoor range have shown corresponding accuracy. Several 50-shot groups with every shot in a 4-inch circle indicate consistent dependability of fine performance at this extreme range. In developing this new cartridge Winchester's ballistic engineers spent months of concentrated effort in experiment. Many different bullets were tried, and various degrees of bullet temper. Different lubricants, different priming mixtures, different powder charges with corresponding different velocities, different shells, all were tried in countless combinations. Out of these tests came this new, superbly balanced, surpassingly accurate cartridge, with:

A new Winchester Staynless priming mixture. A new crimp. A new bullet. A new lubricant. New, higher scoring ability at all ranges for the benefit of hard-holding marksmen.

Place your order with your dealer now, for a supply of the new Winchester Precision EZXS .22 Long Rifle Cartridges, code HS-38. For further information, please write our Shooting Promotion Department.

WINCHESTER REPEATING ARMS CO., NEW HAVEN, CONN., U. S. A.

It's The Tops!



"This book is the greatest thing of the kind we have ever seen."

That is what Mr. Lister said in his review of Earl Naramore's new book "Handloaders' Manual," which review appeared in the December RIFLEMAN. And that unqualified endorsement is being echoed daily by other authorities including many of the two hundred odd members who purchased the book last month.

"Naramore's Manual" is unique in that the author departs from the hackneyed style followed by previous writers on this subject. He describes no reloading tools, recommends no particular "loads." Rather he tells in plain, simple words what goes into good ammunition, why it is necessary, and how to get results with any set of tools.

Here is a book that every shooter, whether a reloader or not, will profit by reading—a book crammed full of invaluable data, and so interesting that you will want to read it at one sitting. A first edition sellout is assured. Better order your copy today.

Make This New Year's Resolution



Keep your monthly issues of THE RIFLEMAN fresh, compact and always available. File each issue in this Deluxe Lifetime binder and you will soon have a reference textbook that will multiply in value.

Ours is a quality binder with genuine fabrikoid covers, finished in rich maroon. The "Frontiersman" figure and lettering are stamped in gilt. A little unbreakable wire which snaps into place holds each issue without the necessity of cutting or punching. There is plenty of space for a whole year's supply of the present magazine.

We give you for 1938 a new cover for The RIFLEMAN. We suggest for the new year this new Deluxe binder, popularly priced at \$1.95, postpaid.

BOOKS A Rifleman Went to War..... Modern Gunsmithing The Book of the Springfield Military and Sporting Rifle Shooting Modern Shotguns and Loads 4.00 4.50 National Rifle Association Barr Building, Washington, D. C. MANUALS GENTLEMEN: ☐ Handloader's Manual ☐ Firearms Blueing and Browning ☐ Big Game Rifles and Cartridges I enclose remittance of \$___ 1.50 which send to me prepaid the books, manu-Six-Gun Cartridges and Loads ... 1.50 Six Guns and Bull's-eyes 1.50 als or fraternal items I have checked. Telescopic Rifle Sights The Woodchuck Hunter ☐ Bair Revolver Manual. FRATERNAL ITEMS ☐ Deluxe RIFLEMAN Binder ☐ 10-K Gold Life Member Pin ☐ New Life Member Brassard 2.50 Annual Member Brassard50 City. 3 in 1 Score Gauge Old Style Auto Emblem Official Rifle Trigger Weight 1.50 .50 ☐ Official Rifle Trigger Weight

AMERICAN RIFLEMAN

VOL. 86, No. 1

JANUARY, 1938

NEXT MONTH

IN OUR February issue we shall publish Part II of Maurice Kellerman's article on the Sportsman's Camera. This second article will deal with the other cameras suitable for the sportsman's use. All cameraminded persons will want to read it.

Part II of T. B. Tryon's article on reconditioning flintlock rifles, which will appear in February, will deal with locks. It will cover the subject thoroughly, and so far as we know is the first article of its kind to appear in print, at least in recent years. It is a very practical article, and will be of interest to lovers of the old guns, as well as amateur gunsmiths.

In February that old-timer of the pistol game, Walter Roper, will present in a new and original way certain principles of optics as related to sighting a firearm, more particularly a handgun. All pistol shooters past middle age, and younger ones whose eyesight is not all they might wish, will be vitally interested in what Mr. Roper has to say.

As we are about to go to press the mail brings in another article by Elliott Jones, this time on the Free Pistol. This is a very interesting article, and we are going to try to get it into the February issue.

The above are but four articles for our February issue that we happen to think of at the moment. Of course there will be others. And we hope also to have some interesting short stuff in this next issue.

Officers of THE NATIONAL RIFLE ASSOCIATION OF AMERICA

GUSTAVUS D. POPE
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MAJ. GEN. M. A. RECKORD C. B. LISTER

Executive Vice-President Secretary-Treasurer

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Shows portion of firing line at one of the main small bore shoots at Roberts Island Rifle Club, near Stockton, California.
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Choke—Its Origin and Functioning
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N. R. A. News Items
Dope Bag
Arms Chest

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POWDER SMOKE

Auld Lang Syne

THERE is something about the Holiday Season that brings to mind friends long unseen. Homecomings and housewarmings take on a sincerity at this season which breaks down petty barriers, hurdles minor misunderstandings, and sends the "Happy New Year!" from the bottoms of the hearts.

The spirit of Auld Lang Syne is a vital thing to an organization such as ours. In the final analysis, we have nothing to offer each other except mutual assistance. No one of us acting alone could save our guns from the attacks of the uninformed or the malicious. No one of us could make our shooting into a nationally—internationally, even—recognized sport. No one of us could prevent the catastrophe of a whole generation of young Americans growing up without a working knowledge of firearms.

No one of us could finance any one part of the task that needs constantly to be done if the American shooter is to be spared the "criminal" brand. So we pool our little individual contributions—three dollars a year, and less, and our ideas, experiences, study, and labor—into one splendid cooperative Association. And that Association, which is each of us, becomes something larger, stronger, more capable of accomplishment, and more permanent, than any of us.

Sometimes we almost regret that our job is being so well done—the job of increasing the size of the shooting fraternity. New faces, new ideas, new personalities, and such expressions as "Who is he?" "What do I get for my money?" "Everything's wrong; let *me* show you how to do it," displacing too often the old friendships, the old "Hello, Jim: how are you? I'm *glad* to see you."

A few short years ago it seemed that every Association member knew every other member. The few tournaments were literally "homecoming" events, with cordial handshakes and inquiries as to the other fellow's health and welfare having all the ring of sincerity. The Holiday Season mails were full of good wishes to friends made on the firing line.

Perhaps our problem-as a magazine, as an Association, as individuals-during 1938 is not so much to extend our gains as it is to consolidate them, and to recapture within today's larger group the spirit of Auld Lang Syne which characterized the shooting fraternity of yesteryear. That spirit is not one of material values measured by discounts obtained, jewelry won, cash prizes secured. Instead, the spirit which has brought the National Rifle Association from obscurity to national prominence is the spirit of values measured by friendships made, healthy bodies and clear minds regained, and service to the Nation well performed though seldom appreciated.

A New Year's toast to Auld Lang Syne: "Good fellowship, good sportmanship, good citizenship—a greater National Rifle Association!"

AMERICAN RIFLEMAN

JANUARY, 1938

The Sportsman's Camera

By MAURICE KELLERMAN

PART I

GUN CRANKS are considered the most rabid in the world . . . except perhaps fishing cranks. And in the light of modern equipment, camera cranks are becoming almost as rabid as either.

The average sportsman look-

ing for a camera faces a problem like the selection of the allround gun or rod . . . for there ain't no such beastie!

Today the question resolves itself into a broad division of "miniatures" versus the rest.

Getting into such a discussion based upon this premise, is "sticking one's neck right out." However, as an average sportsman with more-than-average photographic experience, I'm willing to open such a discussion; so here goes:

A Hornet rifle will not make a satisfactory moose gun. A trout rod will not serve for tuna. Nor will any one camera do all the photographic jobs better than various other types built

for special purposes.

A small camera that will pack conveniently in a pocket or knapsack, and make several pictures on a roll without reloading, is usually first choice of the sportsman who travels on foot. Size and weight need hardly count with the man who travels by boat or trailer. In fact, this sportsman may even develop his negatives en route.

This point brings us to another parting of the way: Are you going to be a "drug-store photographer" forever, or are you going to avail yourself of the modern simplified surefire methods for developing your own films? This question must be answered before selecting the type of camera. The use of the miniature camera almost compels personal negative development and subsequent printing by enlargement.

Since we have made the division of miniature cameras versus

all others, let us consider the miniatures first.

These cameras, using 35-m/m. movie film made up in rolls giving up to 36 exposures to one loading, may be purchased at all the way from \$12.50 to \$100.00 or more. The cheapest of these outfits will all make enlargements to satisfy the average sportsman, but enlargements they must be. Of what use is a

Note: Maurice Kellerman is a professional photographer of wide experience. He is also an outdoorsman, and spends much time in the open, far from the beaten path. Therefore when he speaks on the subject of photography for the sportsman, it behooves most of us to listen.—Ed.

picture 1" x 1½"? However, let not this question of enlarging worry you, as enlarging outfits may be purchased for as little as \$17.50. More about enlarging later.

The rolls of so-called movie film are available in any type of

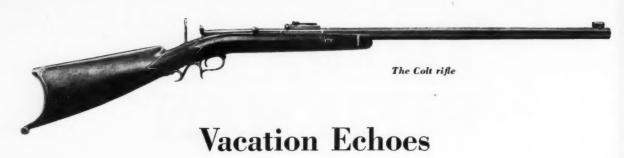
negative emulsion, panchromatic or otherwise. They are manufactured by a dozen concerns, and can be purchased almost anywhere. The cost per roll of 36 exposures is about 65 cents—less than 2 cents per picture.

A small developing-tank outfit will run from \$5.00 to \$10.00. This form of negative development is extremely simple to use. Any inexperienced person may learn the "mysteries" of correct development in five minutes from instructions which come with the outfit. It is preferable to use the developer recommended by the maker of the film. Each company has spent a young fortune in chemical research to establish developing formulas best suited to their films.

In developing miniature-size films, the one essential is cleanliness and freedom from dust particles. As the negatives must subsequently be enlarged, each speck, though perhaps not noticeable on the original film, becomes enlarged with the rest of the picture, and a huge white spot on the finished print results.

Making prints by enlargement is one of the simplest and most interesting branches of modern amateur photography. In fact, it is much easier to make a good enlargement with the equipment now available than to make a good contact print. Do not let the word enlargement scare you . . . it does not necessarily mean the making of one of those bulky and expensive 11" x 14" salon prints to be hung on the wall. It simply means that from the tiny negative you will make a print any size you please. If for the album of past sporting expeditions, post-card size is all you want. Prints by enlargement don't cost any more than contact prints, and they are cheaper than drug-store prints of the same size.

These prints are easier to make than contact prints because as the image of your negative is thrown onto the paper in full view, you very soon learn to gauge the (Continued on page 30)



By N. H. ROBERTS

PART I

66 T 7 ACATION comes but once a year" to the majority of riflemen and sportsmen, and many derive fully as much pleasure in planning-often months in advance-for it as they experience during the actual vacation. The author-unfortunately or fortunately-has four vacations a year for which plans have to be made, but this year the stormy weather in northern New Hampshire during our spring vacation, and illness during the early part of the summer vacation, prevented the completion of certain tests of rifles that I had planned to report on in this article. Therefore these must be left for another time.

The year 1937 appears to have brought the rifle-shooters more improved rifles, smokeless powders, new types of iron sights, better telescope sights, higher-quality factory-loaded cartridges, and numerous other "gadgets," than any decade for a long time back. These new items should keep the rifle cranks busy for some time, while the hunters should be happy with the new hunting rifles and cartridges produced for their special benefit.

The .375 Winchester Model 70 Rifle

During the 1936 Christmas vacation, when calling on Mr. Edwin Pugsley at the Winchester plant, I had the pleasure of shooting the pilot model Winchester Model 70, 375 H. & H. Magnum rifle in their testing room at 50 and 100 yards, and in spite

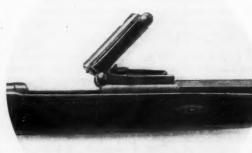
Winchester Model 70, .375 H. & H.
Magnum rifle in their testing room
at 50 and 100 yards, and in spite
of the "heap big noise" made by
that cartridge in a rather small
room, together with the very
heavy recoil, the accuracy of this
arm surprised and pleased me.
Therefore very soon after this rifle
was announced to the public I was
fortunate in securing one in the
"Super" grade, which has been
carefully tested at 100 and 200
yards by myself and my friend
Dr. Fred N. J. Dube, using both
factory-loaded and hand-loaded
cartridges with the 235-grain openpoint, and the 270-grain and 300-

grain soft-point bullets, with various charges of different powders. In our handloaded cartridges we have used only the bullets made by the Western Cartridge Company, which have proved especially uniform in weight, diameter, and accuracy.

This rifle is an especially fine one for a machine-made arm. The barrel is very finely rifled, has a minimum-tolerance chamber, correctly headspaced, and the stock is of nice-grained American walnut correctly inletted and bedded, and fitted with a soft-rubber buttplate. The rifle with sling strap weighs 9½ pounds. The sights are a hooded gold-bead ramp front and the Lyman 48 W. S. J. receiver sight; also the Lyman No. 6 folding two-leaf open rear sight on the barrel.

The rifle has now been fired about three or four hundred times, and gives nice accuracy at ranges including 200 yards, which is the longest range at which we have as yet tested it. After trying a few factory-loaded cartridges with the three different weights of bullets, we decided that the 270-grain and the 300-grain softpoint bullets were the most accurate at the

Breech action of the Colt rifle



target, and after several months' use of the rifle we can see no good reason for loading the .375 Magnum cartridge with the 235-grain open-point bullet, as this bullet shows poorer accuracy at the target, and has less striking energy at all ranges, than the other bullets. ev .23

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The average 10-shot groups at 100 yards rest using the Lyman 48 rear sight and with the factory cartridge with 270-grain bullet, we find to run from 3 to 31/2 inches. The 300-grain bullet averages the same size groups, while the 235-grain open-point averages 41/2-inch groups. The best handloads that we have thus far found for this cartridge are 67 or 68 grains weight of No. 4064 or 151/2 powder, with the 270grain bullet, which load makes from 21/2 to 23/4-inch groups at 100 yards rest with great regularity, and groups of from 5 to 6 inches at 200 yards rest. We have made many 5-shot groups at 100 yards rest with this load that measure from 11/2 to 2 inches, and we believe that a skilled shot who is not affected by heavy recoil and muzzle blast would have no trouble in keeping ten shots in a 2-inch circle at 100 yards, and in a 41/2-inch circle at 200 yards, rest. The 300-grain bullet with 60 or 61 grains of No. 4064 or 151/2 is as

accurate as the best loads with the 270-grain bullet, and is a much more pleasant load to shoot, as the recoil and muzzle blast are considerably less than with the other loads and bullets. However, the recoil and muzzle blast are so severe that very few men can fire thirty or forty rounds in an afternoon without having a severe headache, and a lame arm or shoulder for the following day or two. Of course this .375 Magnum was not intended as a target rifle, but instead as an arm suitable for killing African big game (except elephant and rhinoceros) and Kodiak grizzlies. Personally, I believe that the .375 Magnum rifle is too much gun for the great majority

f men to use on any big game on this to ask me about the accuracy of this rifle 100 yards rest using Winchester factorycontinent, and at least eight men out of every ten would find the .35 Whelen, the .280 Dubiel Magnum, or the .300 Magnum a far better arm for shooting even the grizzlies mentioned. They would shoot more accurately and place their bullets better-consequently making cleaner kills -with these rifles than with the .375 Magnum. At least this is my opinion in the matter.

Doctors generally have better control of their nerves than do other persons, and Doctor Dube appears to be less affected by heavy muzzle blast of the .375 Magnum than I am; consequently he usuallymakes smaller groups at all ranges with this rifle than I average. However, even he has a headache after firing twenty shots, and his groups with any of the loads are enlarged as a consequence. Other riflemen who have shot this rifle on our range can seldom be induced to fire more than ten shots.

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We have not yet found any animal in our state large enough to test this rifle on, therefore we cannot give any facts regarding its killing power. But this cartridge and similar others have been used in Africa for many years, and we know from the reports of these hunters that the .375 Magnum is regarded as an exceptionally good killer on the big game there. Later Doctor Dube may use this .375 Winchester for shooting polar bear, and then we shall be able to report the results.

Testing the .257 Winchester Model 70

It is surprising to me how many riflemen from the United States and several foreign countries have written and cartridge. These correspondents apparently believe that since I was the designer of this cartridge it must necessarily follow that I was in some way connected with the designing and manufacture of the rifle as well. Of course that is not the case, as I had absolutely nothing to do with the designing of either the Remington or Winchester rifles for this cartridge. However, to enable me to give correspondents the information they desire, Mr. Pugsley forwarded to me one of the standard-grade Winchester Model 70 rifles in .257 Winchester-Roberts caliber, for tests on the range. This rifle was fitted with the standard gold-bead front sight on the ramp, a Lyman 48 receiver sight, and baseblocks for scope on the barrel. I am not as young as I once was, and can no longer use any form of iron sights to the best advantage; therefore in my tests for accuracy I must resort to the "glass eye."

As the rifle that I tested was of standard-grade regular factory output, I believe that my tests should show just what degree of accuracy can be expected of a rifle that the average rifleman would receive from Winchester. My first tests were at

100 yards, bench rest

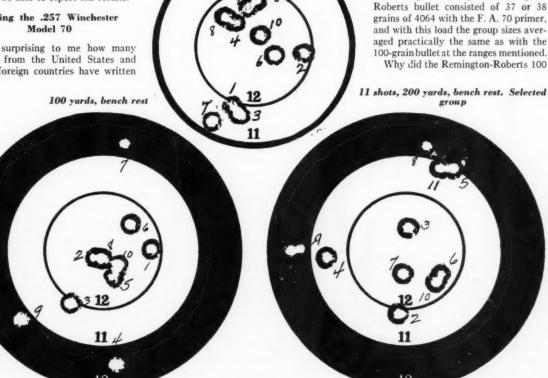
loaded cartridges with 100 and 117-grain bullets. Nearly all tests were made with either my 12X Unertl or my 12X Souther scope, and only a small number of cartridges were fired with the Lyman receiver sight, to adjust it for shooting woodchucks at short range.

Using the W. R. A. cartridges with 100 and 117-grain bullets, my 10-shot groups at 100 yards averaged 2 inches, with frequent 134-inch groups; and the majority of these groups showed from five to seven bullets in or touching a 1-inch circle. At 200 yards rest the average groups ran from 4 to 5 inches, with occasional 31/2-inch groups. At this range the 117-grain-bullet cartridge usually gave the smaller groups. but at 100 yards there appeared to be little if any difference in the accuracy of the two bullets

With hand-loaded ammunition, using F. A. 70 primers, 39 grains weight of 3031 or 40 grains of 4064 powder, and the 100grain Remington-Roberts bullet, there was no trouble in making 11/2-inch 10-shot groups at 100 yards rest with the 12X Unertl scope, and 3-inch groups at 200 yards rest. At 100 yards the groups usually showed six or seven bullets in a 1-inch circle, with five or six in a 2-inch circle at 200 yards. Except for the one selected group, the targets shown are average ones, such as we made practically every day with the hand-loaded ammunition in this rifle. The best hand-

load using the 117-grain Remington-Roberts bullet consisted of 37 or 38 grains of 4064 with the F. A. 70 primer, and with this load the group sizes averaged practically the same as with the 100-grain bullet at the ranges mentioned.

Why did the Remington-Roberts 100



and 117-grain bullets give better accuracy in this Winchester rifle than did the Winchester bullets of the same weights? I believe the reason to be that the Remington-Roberts bullets are from .2570 to .2575-inch in diameter, whereas those of Winchester make measure about .2565-inch. This same was true in the case of the Remington and Winchester factory-loaded cartridges in this rifle, as the Remington cartridges practically always gave the smaller groups at both 100 and 200 yards.

All things considered. I regard this rifle as an especially fine-shooting arm for a machine-made one. It is just the right weight to carry comfortably afield for shooting woodchucks, etc., yet heavy enough to give satisfactory accuracy at the target in offhand and rest shooting. The trigger pull on the Model 70 Winchester rifle is the very best that I have yet found on any factory-made rifle, and the fall of the firing pin is very short and the action very speedy. The man who cannot afford a high-priced custom-made rifle in this caliber need have no hesitation in selecting the Winchester Model 70; and, judging from my tests of this rifle over a period of several months, he will find the accuracy satisfactory in every respect.

Pointed Bullets for the .25 Roberts and .257 Roberts Rifles

In my previous articles on rifles of this caliber I have stated that we have never had any pointed bullets that gave satisfactory accuracy and would make as small groups as the round-nose bullets such as the .257 Remington-Roberts. However, we at last have a bullet of the pointed type in 100 and 110 grains weight made by the Western Tool and Copper Works, that gives fully as fine accuracy as, and possibly even finer accuracy than the other type of bullet mentioned. These W. T. & C. .25-caliber pointed bullets were, we understand, designed by Elmer Keith for use in the .250-caliber O'Neil Express rifle, but they have proven especially accurate in the .25 Roberts and .257 Roberts rifles of the different makes. The only fly in the ointment is the fact that these W. T. & C. bullets cost nearly three cents apiece delivered here in the East, which is entirely too high a price for any .25-caliber bullets, and will prevent their use by the majority of riflemen. In fact, in my three custommade rifles for the .25 Roberts and .257 Roberts cartridges, I find that the 117grain boat-tail open-point Lubaloy bullet made by the Western Cartridge Company and retailing at about ten dollars a thousand, will make just as small groups at 100, 200, 300 and 500 yards as we average with these expensive pointed bullets. However, these pointed bullets are less affected by cross winds than are the other type, have a somewhat lower trajectory

and higher remaining velocities at all ranges, and are the better bullets for shooting woodchucks, coyotes, etc., at long ranges. The 110-grain bullet is really a trifle too light, and should have weighed 115 or 117 grains in order to possess greater striking energy and killing power at the longer ranges. My tests with these two weights of bullets show that the 110-grain bullet is no more accurate at any range, and no better killer on woodchucks, than the 100-grain bullet of this type.

A Rare Colt's Breech-Loading Rifle

Comparatively few men realize the remarkable inventive genius, the marked business ability, and the wide scope of activity in the firearms line of the late Col. Samuel Colt, inventor of the world-famous Colt revolver. Furthermore, we have every reason to believe that no book has yet been written that covers all of the different models of revolvers, all of the different types of percussion-lock guns and rifles, and all of the models of breechloading guns and rifles using metallic cartridges that have been manufactured by the Colt Company. We have books describing and illustrating the majority of these arms, but not all of them.

Quite frequently when visiting my friend "Shiff, the Gunman" in North Woodstock, New Hampshire, the latter has shown me a Colt revolver or Colt rifle of a type that he had never before seen in all his years in the gun business, during the course of which he has handled many thousands of "all known varieties" of guns, rifles, revolvers, and pistols. As an instance of this, on a recent visit to Shiff's this gentleman produced the rifle illustrated herewith. Neither he nor I had ever seen or heard of such a rifle before, and I doubt if many other persons have.

The rifle in question has a 27-inch fulloctagon barrel, and was built to handle the .44-77-470 cartridge with paper-patched bullet. It is one of twenty or twenty-one "Target Model" rifles that were made for the Colt Rifle Club of Hartford. The breech-block swings up and forward much the same as that of the .45-70 Springfield army rifle, and there is a bolt-like hammer that slides forward in a straight line when the trigger is pulled, striking the firing pin and firing the cartridge. As a safety feature, the trigger cannot be operated until it is first pushed forward, like a single settrigger. It then has about a 4-pound pull. The front sight is of the usual hooded pinhead, with a rear peep sight through the tang that is raised or lowered by screwing up or down. The rear-sight disc has a horizontal piece sliding in a dovetail slot and carrying the peep-hole, which can be driven to the right or left for windage. There is also an open rear sight, attached to the barrel close in front of the breechblock hinge, as shown in the pictures.

When a young man, I frequently heard of the Colt Rifle Club, the matches shot by them, and the scores made by the different members; and I often heard, especially, of the fine shooting by C. Beach, S. C. Hurlbut, and H. Freeman. Most of the matches were at 200 yards, offhand, with occasional ones at 40 rods (220 yards). Yet, strange to say, I never knew what make of rifles the men in this club used. I had heard that their rifles all used the .44-77-470 center-fire cartridge with paper-patched bullet, but as in those days the Remington rolling-block and Remington-Hepburn rifles in this caliber were popular with many target riflemen, I had supposed that the Colt Rifle Club used these rifles, or possibly Sharps rifles.

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As reported to Shiff, this rifle club had twenty members, each using this "Target Model" Colt, which thus accounts for twenty of these rifles. It is practically certain, however, that one of these rifles was also made for Colonel Colt, which would make the total number twenty-one; and these, we understand, were all of the rifles of this model that were ever manufactured, which would account for their great scarcity. However, it is reported that during 1869 and 1870 the Colt Company made under contract for the Russian Army 40,000 of these rifles in the military model, chambered for this same cartridge. If that be true, how does it happen that, so far as we can learn, no one in the United States has one of these Russian Army Models? And as far as we know, Shiff has the only specimen of the Target Model in this country. The United States Cartridge Company's arms catalogue does not mention either model of these rifles, and no book or catalogue that Shiff or I have yet found even hints at such a rifle ever having been made by Colt.

The question now arises: who invented this rifle? Did Colt invent it; was it designed by one or more of his workmen; was it the invention of some Russian Army officer, or who did invent it? This appears to be a deep mystery. Can anyone give us any further information regarding it? And can anyone tell us anything about any of the men whose names are stamped on the under side of the barrel of the rifle illustrated? Why were these names put there? Who knows what interesting lore is connected with these Colt Target Model rifles and the men who owned them? The rifle illustrated is in perfect condition inside, and strictly fine outside. It evidently was some expert rifleman's "pet," and was cared for accordingly.

Both Shiff and I are much interested in the history of these Colt rifles, and I, personally, shall be very glad to hear from anyone who can furnish further information about them, so that it may be published in this magazine.

The ABC of Pistol Shooting

By F. L. WYMAN

VERYONE these days appears to be interested in pistol shooting. Club secretaries write: "The boys want to start a pistol team"; individuals write for information on special target guns; police departments are making plans for the training of personnel-until one wonders if we aren't soon to become a nation of pistolmen rather than a nation of riflemen. Dyed-in-the-wool riflemen are trying handguns, and finding that this is good practice for their rifle work, particularly offhand.

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Pistol shooting appeals to the civilian shooter for many reasons, among which are low initial cost, ease of transporting guns and ammunition, and ease of finding the limited space required for club or private range. The professional man takes to the game because the nerve-control, muscular coordination, and mental concentration developed in handgun shooting appeal to him, while at the same time affording the complete relaxation possible in few other sports.

The law-enforcement officer regards his ability to shoot as being a very good form of life insurance. Furthermore, it is excellent advertising for his Department, as well as promoting discipline and improving morale. And it tends to prevent gunplay on the part of criminals, who usually will not draw against an officer who is known to be a good shot.

Because of this increasing interest in pistol shooting, there are many beginners who are looking for information as to how properly to begin. The old idea that a good pistol shot is a super-man, has largely been dispelled. Rightly so, because anyone in good health and with normal vision (natural or corrected) can learn to shoot a handgun well. Nor need he be a ballistic engineer. The familiar saying, "Hold 'em and squeeze 'em," about tells the story; and if one will start right and practice faithfully and regularly, I can promise him that his marksmanship will surprise even himself within a short time.

And now let us select a gun for the beginner. Two reasons dictate that this be a .22: First, the low cost of ammunition; and second, the lack of disturbing recoil and loud report. Furthermore, this first gun should be a revolver, for we are not going to confine ourselves to just slowfire. Fortunately, there are several excellent revolvers from which to choose.

We might mention first the Harrington & Richardson single-action "Sportsman" -the one revolver that gives us a choice of five different stocks. And this choice of stocks, together with the reasonable price of the gun, has made the Harrington & Richardson one of our most popular handguns. The single-action model is the one to get, as it is far superior to the doubleaction gun.

The Colt "Officers' Model" and Smith & Wesson's "K-22" are both excellent .22caliber revolvers. Both of these guns are considerably heavier than the Harrington & Richardson just described, which tends to make them hold steadier, at least outdoors. These guns are built on the same frames as the larger-caliber target revolvers of these makes, and for this reason many shooters prefer to begin with them. However, both cost considerably more



Sketch A

than the Harrington & Richardson. When one decides to start with a Colt or Smith & Wessons arm, his choice between the two should be governed largely by the way the stocks of the two guns fit his hand. Only one factory stock is to be had for each, so if possible try them both before making a final selection.

Whatever type gun you buy, be sure that it is equipped with a Patridge-type front sight and square-notch rear. Have the front sight either 1/10 or 1/8-inch in width-preferably 1/8.

Get only one gun to begin with. Many prospective pistol shooters seem to think that the more equipment they have, the more they look like a real expert; but as a matter of fact the expert is usually the man with the fewest guns. He has one or two guns, and plays with them constantly until he knows every little weakness of both the gun and himself. "Beware the man with one gun!"

I have purposely not mentioned either the Colt "Woodsman" or the "Hi-Standard." Both are wonderful little guns, but they are not for the beginner. First there is the matter of safety. It is hard for a beginner to realize that even though he has just fired a shot with one of these guns, it is possible to fire again by merely pressing the trigger. Then, again, beginners are semi-automatic this tendency is increased. Also, both of these guns require some special trigger and stock work, as well as barrel-weighting, for them to perform their best, and these are not jobs for a

Right at the outset it is well for the beginner to become thoroughly familiar with a few basic safety rules, not only for his own protection, but to safeguard others as well. For even the small .22-caliber guns have a long danger range, and surprising penetration. So commit the following simple rules to memory, and thereafter bear them constantly in mind during all your shooting:

"Never hang your target on a door or the side of a building where shooting may endanger persons on the other side whom you cannot see. For a .22 long rifle bullet can go through two ordinary doors or the side of an ordinary frame house, and still have sufficient velocity to kill.

'Always look at a gun when it is first handed you, to see if it is loaded. If it contains any cartridges, unload it immediately. And do not make this inspection hurriedly: be sure the gun is unloaded before proceeding further.

"Never point a gun at an object you do not intend to shoot.

"Never leave a loaded gun where it may be picked up by children, or by adults unfamiliar with firearms.

"Refuse to shoot at bottles, rocks, or other hard-surfaced objects, as the bullets will ricochet and may seriously injure someone out of your line of vision.

"When on the range never snap your gun unless you have taken a position on the firing line. You may know that the gun is unloaded, but others do not.

"At a shooting match, always carry your gun with the cylinder swung out or the slide locked back.

"In case of misfire, leave the gun closed and keep it pointed down the range toward the target for not less than 30 seconds. It may be only a hang-fire, so be careful.

"Take care of your gun. Keep it clean and free from dirt, and well oiled, and it will function properly and maintain its accuracy for a long time. A properly cared-for revolver will last almost indefinitely, with but few repairs or adjustments."

First of all, if there is a pistol club in your locality, join it. While it is entirely possible to become a good shot without belonging to a club, you will enjoy the friendships made on the club range, and always inclined to fire too fast, and with a all the members will be glad to help you.

This personal instruction and competition will play a large part in your getting the maximum enjoyment from the sport.

Because I firmly believe that a beginner should practice nothing but slow-fire until he can average 70 x 100 or better on the Standard American Pistol Target, the instructions in this first section will have to do with that type of shooting only.

The instructions given here, being primarily for the man or woman just learning to shoot a pistol, will start right from the beginning, and take up the different steps in the order in which they occur, rather than in the order of their importance.

Before going further, let's take time out to discuss three vital things necessary to becoming a good pistol shot. First, you must form the habit of doing everything in the same (right) way-always. Second, you must learn 'o relaxed all the time you are on the firing line. Third, you must concentrate on the job in hand. These things are absolutely fundamental and vital to good pistol shooting. You simply cannot disregard them and become a good shot. To form correct habits, fix the right things so firmly in your mind that you follow the correct procedure time after time, in exactly the same way and without conscious thought or effort. These correct habits can only be formed through practice, and more practice. Do the same thing over and over until it becomes as natural as stepping on the gas in your car.

Habit, through practice, leads to a smoothness of muscular action unattainable in any other way. For the beginner, each action in firing a gun calls for a separate thought, but soon, through habit and practice, all this becomes automatic and seemingly effortless.

Relaxation may at first appear to be impossible on a pistol range, especially in a gallery where there is always considerable noise. But relaxed you must be, in both mind and body, if that next shot is to go into the ten-ring. To let off a shot when you are not relaxed is to invite a poor hit or a complete miss. Look at the expert: When he takes his position on the firing line he is completely relaxed, with no sign of strain. He stands freely and comfortably with his head naturally erect, his gun held loosely, and his arm straight but not pushed forward or strained.

And then you must concentrate. When you take your place on the firing line, concentrate upon your shooting, and nothing else. Ear-stoppers (cotton is the best) help to keep out much of the noise of the firing line which tends to distract the attention. It isn't necessary to be cool or aloof to shooters nearby, but don't let your attention wander too much. And think about what lies ahead, not what is past and gone. What if your last five shots were all tens? It is the next five you are concerned with now.

And now, having selected a suitable gun and digested the foregoing basic shooting facts and principles, let's get along with our detailed instructions and our first snapping practice.





Figs. 1, 2, and 3 (top to bottom)

First let us take up the matter of holding the gun. Take the gun in your left hand, and stand on the firing line with your left side toward the target. This position assures the gun always pointing down the range in a safe direction.

Having assured yourself that the gun is empty, cock it—for it is only with the trigger back in the firing position that the correct grip can be taken. After cock-

ing the gun, and while taking your grip, hold the gun in your left hand with the thumb between the hammer and the frame, as shown in Figure 1. With the thumb so placed there is no possibility of an accidental discharge.

Now carefully study Figures 1, 2, and 3. Figure 3 shows a top view of both the gun and the shooter's hand after the proper grip has been taken. Note particularly two things: the high hold (shown by the hammer spur just clearing the web between the thumb and first finger by a small margin), and the fact that the gun is so held that the thumb can lie straight along the left side of the frame.

The high hold is for the purpose of bringing the axis of the barrel as nearly in line with the arm as possible, to cut down recoil effect. Recoil control by this method is not a necessity in slow-fire, but when you take up timed and rapid-fire it will be necessary, so learn the one hold that is good for all types of shooting. For the fewer variations you make, the fewer the things you have to remember and the fewer will be your mistakes.

When the revolver recoils, you want the rear support for the stock to be so placed that the gun muzzle will move straight up, and not up and to the right. Therefore it is necessary to so place the gun in your hand that the back of the grip is supported over its full width. This is the reason for holding the gun as shown in Figure 2. The thumb extends straight forward along the left side of the frame, thus bringing the base of the palm further to the left than normal. Place your thumb on the cylinder latch, but make no attempt to press it against the frame. Just place it there and forget it. With a gun so held, support against the recoil is given for the full width of the grip.

Now look at Figure 2 and note the finger position. A very light grip on the handle is all that is necessary. Make no effort to obtain contact between the checkered right-hand stock and the palm of your hand. The gun-makers might better checker the front and rear of the wooden stocks, and leave the sides smooth. Exert absolutely no pressure with your fingertips. Let them remain away from any contact with the handle.

During the time you are taking your grip, let the trigger finger remain outside of the trigger guard. When the gun is well placed in your right hand, and before removing your left thumb from between the hammer and the frame, rest the ball of the end joint of your finger lightly on the trigger. This completes the grip, which should now be as shown in Figures 2 and 3. We are now ready to take the correct shooting stance.

From this point on bear one thing always in mind: never, under any circumstances, move any finger except the trigger finger, or shift the grip in the slightest. If, when you are aiming, the gun doesn't feel just right, bring it down and start all over again. Keep your fingers, particularly the little finger, perfectly motionless. This is very important.

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Now turn your body so that your right side is toward the target, and assume the "Raise Pistol" position as shown in Figure 4. This cut shows the shooter ready to extend the arm, while Figure 5 shows the position of the feet in relation to the line of sight. The line of sight is indicated by the yardstick between the feet.

Stand flat on both feet, with the heels from 14 to 18 inches apart. Do not spread your feet too far, but only enough to prevent forward and rearward sway. A good general rule for foot spread is that it be one-half the normal stride. If you normally step 32 inches, then about 16 inches should separate your heels. Your weight should be evenly distributed on both feet. Both legs should be straight but without the knees being locked and setting up muscular strain.

Whether you face the target rather fully or turn more to the

side, is largely a personal matter. What will prove to be *your* proper stance in this respect may be all wrong for someone else. We are all built differently, and we naturally stand in different positions. (Good batters do not all face the pitcher the same.) Be sure you are comfortable, and then relax. You have two ways in which to check yourself for incorrect body position: Facing too far to the left will cause your shots to string across the target horing the target too much causes the shots to string vertically for the same reason.

Put your left thumb, or the entire hand, in your side trouser pocket, or let

the arm hang at the side, as you prefer. Whatever position your left hand takes, be sure your left shoulder is lower than your right, else your gun will tend to sag.

Now carefully study the shooter in Figure 4, and observe his easy, relaxed position. He is concentrating upon the bullseye, and nothing else.

At this point we may as well consider the matter of breathing. Just before ex-



Fig. 4

tending the gun to the aiming position, take a fairly deep breath, and expel normally. Then take a second breath, expel about one-third of it, and hold the rest by closing the throat, until the shot is fired.

Before moving the gun from the "Raise Pistol" position, focus your eyes upon the bullseye, and from now until the shot is fired continue to concentrate both eyes and mind upon this one subject. Stand with head erect in the same position you would assume in pointing your forefinger at the target. One very common fault among new shooters is to duck the head until the chin almost touches the right

shoulder. This is not correct, and no real top-notch shooter ever does it. It sets up muscular strain, which is what we wish to avoid.

Now you are ready to aim, so push the gun straight out and upward at an angle of about ten degrees above the horizontal. Extend the arm until the elbow is straight, but not far enough to strain the elbow muscles. Your arm should be merely comfortably straight. What little you may be able to stretch it will hurt rather than help your shooting. Allow the entire arm to come down slowly, being careful not to bend the elbow. As the arm comes down, the gun passes directly through the line of vision, to come to a rest at a point immediately below the bullseye, known as the "six-o'clock" aiming point.

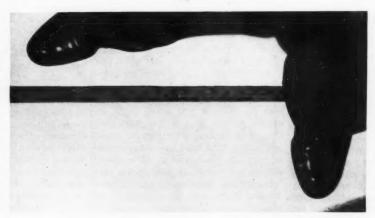
Be careful all the while to keep that same loose grip on the gun. As the arm is lowered, more of the gun's weight is felt, exerting pressure upon the base of the palm of the hand and the top of the second finger between the trigger guard and the handle. But don't let this extra pressure cause you to take a tighter hold with the fingers. As the arm lowers the

gun into the six-o'clock aiming position, keep your eyes on the bullseye, concentrating at that point and closing your mind to everything except aiming the gun. As the sights come into your field of view you will observe that they are not lined up quite perfectly; the front sight isn't exactly centered in the rear notch. A slight movement of the wrist will correct this, and then you are ready to aim.

Observe two things in Sketch A: the position of the front and rear sights in relation to each other—top of front sight level with top of rear sight, and directly in the center of the notch; and the position of the bullseye directly above the

front sight. You are able to hold more uniform elevation this way than by any other method. For slow-fire shooting, where you have plenty of time, hold the front sight right at six o'clock, without trace of white showing between the sight and the bullseye. If you hold in the center of the bullseye, or allow a small amount of white to show between the bullseye and the front sight,





you will find a tendency to string your shots up and down on the target.

You will note that nothing has been said about closing one eye while aiming, and I hope you still have both eyes open. If not, open the closed eye, and aim as you would normally look when pointing. Even with both eyes open your stronger eye will control your aiming, and you will not deny yourself the light and vision of the other eye. Furthermore, it is almost impossible for anyone to close one eye without partially closing the other.

Certain shooters with defective vision may find that they are unable to aim with both eyes open. These persons should have glasses fitted for shooting. But give binocular (two-eye) aiming a thorough trial before going to the expense of glasses, because with practice many shooters find binocular aiming to be a definite advantage, even though they at first thought it impossible. Our eyes respond to training

like everything else.

By now you have probably discovered that it is impossible for you to hold the gun motionless on the target. If so, don't be at all discouraged: nobody can hold a handgun motionless in the aiming position. It just can't be done. With some shooters the gun sway is more pronounced than with others, but there is always some motion, regardless. Training will go a long way toward reducing this sway, but it can never entirely overcome it. But never mind. You will learn to get the shot off when the sights are exactly right.

You may find, while aiming, that your front sight begins trembling after the gun has been held out for six or eight seconds. The reason—nine times out of ten—is that you are tightening the entire hand while squeezing the trigger, instead of using only the muscles of the trigger finger. Loosen your fingers, and see if the front sight doesn't stop dancing around. Here we have the real reason for a light grip on the gun handle.

Your arm is probably tired now, so put the gun down while we discuss the next

step.

And now we come to the real heart of good pistol shooting; what makes the difference between the tyro and the expert, between a 6 and 10, between a raw beginner and men like Jake Engbrecht, Emmett Jones, Elliott Jones, Al Hemming Charles Askins, and others. This is trigger squeeze, and just about 90% of all good pistol shooting depends upon doing this one thing right.

You have seen for yourself that even though the arm does sway, it doesn't move so much but that you can hold all your shots in about the six-ring at 20 yards. With training, the majority of this arm sway will disappear, until you can hold in the bullseye, or perhaps the 9-ring. With some training your holds will be good for

an average score of 90. Anyone can accomplish that, but most shooters fail because they throw the sights out of alignment by bad trigger squeeze. It is not always bad, either. Sometimes it is rotten!

The way to develop proper trigger squeeze is by "dry practice" with an empty gun. When you know that the gun is not loaded, there is no tendency to jerk the trigger; for you know there isn't going to be any recoil or loud report. You don't fight the gun, or try too hard. In other words, you remain relaxed. In your dry practice, build up the habit of correct trigger squeeze until it becomes natural; then carry into your regular practice the thought that all you are doing is firing an empty gun—and the trigger jerk will be gone!

Carry on this snapping practice at home, at regular intervals. By doing it daily for fifteen or twenty minutes instead of once a week for an hour or so, you remember from day to day the right things to do, and thus progress much faster. Use an aiming bullseye which, at the shorter distance, appears to be of the same size as the regulation bullseye at the standard distance.

Let us return for a minute to this matter of arm sway. You have seen that when you know the gun is unloaded, the sights do not sway more than to the sixring. Snap the empty gun a few times, and you will observe that while some of the shots would be out to the edge of the six-ring, most of the time the hammer falls when the sights are lined up pretty well under the bullseye. In these few "dry" shots you haven't tried to control the arm sway, but you have concentrated upon trigger squeeze! Therefore, do exactly this when you fire your first shots. Let the arm sway, and begin the trigger squeeze the moment the sights first line up at six o'clock on the bullseye; and continue that trigger squeeze straight through until the gun fires. No matter if the sights do waver off a little to one side or the other: continue your steady increase of pressure on the trigger. The pressure should be increased at such a rate that the hammer will fall in from four to five seconds after the sights first come into correct position. If you do this there is no reason why your shots should not all lie within the area over which you found your gun swaying when dry-snapping a few minutes ago.

During all of your slow-fire shooting, both dry-snapping and actual firing, remember to take the gun down after each shot. Lay the gun on the shooting stand, and let the right hand hang at your side so that the blood will circulate freely through the veins. And all during this "rest period" flex the muscles of your shooting hand, and do everything else possible to avoid cramping the finger

muscles. Fit the gun into your hand for each shot.

As you progress with dry practice, unconsciously there will be built up a muscular habit of increasing pressure on the trigger only at such times as the sights are in correct alignment, at the proper aiming point on the target. As this habit is formed your groups will begin to grow smaller, but all the while you must be watching for shots that are distinctly out of your normal group, and which have been caused by a poor squeeze. Don't attempt to know when the gun is going to fire: much better results will be had in slow-fire if the gun shoots unexpectedly, so that you have no way of knowing when to jerk or "flinch."

You will soon find it a great advantage to learn to "call your shots." To do this, imagine the counting rings on the target as being the face of a clock. Then, a shot in the eight-ring, high but a little right of center, becomes "an eight at one o'clock"; and so forth for any other position of the shot. At the instant the hammer of the gun falls—though you should not know beforehand when this will be, a picture of the sight alignment in relation to the bullseye is registered upon your

mind

As your scores improve you will find that being able to call your shots increases your confidence. Everyone gets holds that they are not proud of, and it is some satisfaction to find that the bad shot is

where you called it.

Through this sight-calling you will be able to check up on faults that creep into your shooting from time to time. If, when you are able to call your shots, you find a bullet hole in an outer ring of your target at seven or eight o'clock, on what you called a good hold, it is very apt to indicate a jerk on the trigger. Trigger-jerking happens so fast that, with a loaded gun, a misalignment of sights is covered up by the recoil.

Should you get a low-counting shot at one or two o'clock on a hold you thought good for, say, a ten or a close nine, check up and see if you have the base of the palm of your hand far enough to the left to support the gun handle against straightback recoil. If the base of your palm does not support the handle, the recoil effect will be to throw the muzzle high and to the right.

An excellent way to check up on your trigger squeeze and see just what progress you are making, is to have a friend at the range load your gun, leaving one or two chambers empty, and close the cylinder before handing the gun back to you. Then, without looking to see where the "blanks" are, you proceed to fire as if each chamber were loaded. If the hammer falls on an empty chamber without disturbing the gun

(Continued on page 31)



More About the .22-3000 Lovell

By HENRY C. R. AKIN

Witten about the merits of the Hornet cartridge. The sentiment has fluctuated pro and con, but nothing much has ever been settled except that within certain limits the Hornet is a remarkable cartridge. And all the while the gun-cranks have continued to sigh for a relatively light load that would measure up to their requirements; a cartridge that would have just a little more "push" than the Hornet, without getting into the magnum class. In short, they yearned for a "glorified" Hornet.

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Other loads were experimented with and discussed. The great makers of arms and ammunition offered nothing that filled the bill. The .220 Swift is an excellent load, and so is the .257 Roberts, but both are too powerful and too noisy. They have proved to be just too much cartridge to suit a certain class of shooters.

Great men, we are told, are often born in lowly places. And so, sometimes, are great things. It was in just such a way that, modestly and unheralded, the marvelous .22-3000 cartridge was conceived and brought forth by Hervey Lovell; and "thereby hangs a tale."

After due consideration of available factory cartridges and a number of the special custom-made .22 and .25-caliber loads, I concluded that this new .22-3000 Lovell was exactly what I wanted. Why the merits of this cartridge have been so deliberately and persistently ignored by the arms and ammunition makers, is a mystery.

In due course I had a Winchester 54 chambered by Hervey Lovell for the .22-3000. Then one fine day my son Stephen, my friend Dr. Robert C. Ellis, and I sallied forth to the target range to learn the truth. I felt like a child again, with a new toy. Our sighting-in groups (10 shots) at 50 yards could be covered with a dime. I dropped back to 100 yards, and a silver quarter could cut all

CONCERNING OUR NEW COVER

WE have for some time contemplated certain changes in the format of The American Rifleman which appeared to be desirable. We began with the cover, and have developed a design which we believe possesses distinctiveness and character, and will at the same time enable us to get the most out of our cover pictures. With the old cover this matter of pictures has always been a problem.

Changes in the rest of the magazine will follow in due course, until we feel satisfied that the format and general arrangement are to the fullest extent in keeping with the aims and purposes of the magazine. Watch out for these changes, and let us know what you think of them.

No changes in the policy of the magazine are contemplated—only a freshening-up of pages.—Editor.

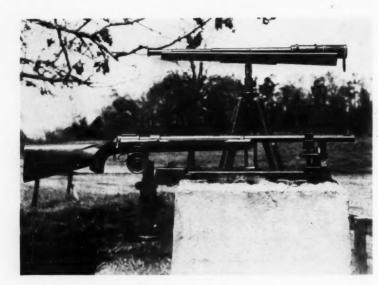
the holes but not quite cover them. Doctor Ellis shot at 50 and 100 yards, and it became quite apparent that in the hands of an able rifleman, minute-of-angle groups were not only possible, but could be made quite consistently. This shooting was done from an improvised rest, using a five-power Lyman scope with coarse crosshairs.

And this marvelous, consistent accuracy of the .22-3000 "sticks." As to zero-holding qualities, I haven't changed the sight settings during the entire hunting season since the rifle was first targeted last May. Further shooting demonstrated beyond question that the .22-3000 Lovell equalled the Hornet in accuracy up to 165 yards, and surpassed it beyond that range.

For crow and chuck shooting the Lovell required no change in sight setting up to 200 yards if sighted to place the center of impact an inch above the point of aim at 100 yards. The muzzle velocity of the .22-3000 is about 3100 feet, according to Mr. Lovell, which gives slightly better wind-bucking qualities than the Hornet has with 2645 feet muzzle velocity, both using the same Hornet bullet.

We wanted a trajectory table, so we launched forth, with makeshift home-made paraphernalia, upon an elaborate course of experiment which in the end proved more laborious and amusing than profitable. At first the idea of plotting a trajectory curve by firing through a series of thin paper screens seemed quite feasible, so we selected a suitable level piece of

(Continued on page 29)



Our home-made rest, with a heavybarrel 52 in place

A Home-Made Machine Rest

By M. A. COOPER

WILT a machine rest, Mr. Addicks and I, and it wouldn't work. Harry Pope told me what to do to it, and after I had done that it did work. It will now get the last bit of accuracy out of a 52. That is the gist of this article. What follows is merely a detailed account of what we did, why we did it, how we did it, and what happened.

Please note that this machine rest, though nearly three years old, has been performing satisfactorily only for the past several months, during which time about 5,000 rounds of ammunition have been fired.

We badly needed some means of testing rifle barrels, that would be less subject to human error and less dependent upon human skill, than the bench rest. Mr. Addicks makes rifle barrels, and I test them for him. I made a rough sketch of a machine rest, and Mr. Addicks made the patterns and machined the castings. In other words, he made the rest while I looked on. The general design followed that of the Weaver rest, but with some important modifications. In fact we would have gotten the Weaver, had it at that time had convenient adjustments for elevation and windage. Since we were making our own rest, we gave it a good deal of weight, and some extra length (cast iron doesn't cost much by the pound). We also put micrometer adjustments on the rear "V," with heavy bolts to lock these in position.

The rest was mounted upon a concrete pier, with a footing 6 inches thick and projecting 6 inches beyond the pier on all sides. We are not bothered by the ground freezing here, so this footing was ample.

After a few days' wait to allow the concrete to set, we bolted down the rest and tried out at 100 yards a 52 with a 1½-inch straight barrel which Mr. Addicks had just finished. The results were awful. The best group ran about 3 inches, and many of them were much larger. We then put the gun on the bench rest, and down went the groups to an average of below 1½ inches. We tried every kink we could think of to make that machine rest perform, but without success. So we covered it up and left it sitting there for over two years. But every time I went out to the range I wondered what the trouble with that rest was, and why other machine rests worked and ours didn't.

And then, one time, Major Hession was kind enough to give me an introduction to Harry Pope. I called on Mr. Pope, and in the course of a most interesting visit mentioned our troubles with the machine rest. Whereupon, Mr. Pope showed me his rest, and explained the principle upon which it depended for its accuracy. What a tiny thing his rest seemed in comparison with ours! * The base, in contrast to our ton of concrete, consisted of three 2 by 6-inch timbers. And yet I knew that with that rest Harry Pope could determine the sight setting for 1,000 yards on a brand-new barrel. Major Trull told me that after Harry had done this for him, he had taken his new Pope barrel to Poughkeepsie and actually gotten a bullseye on his first sighting shot at 1,000 yards!

The secret of the Pope rest is this: The bearing surfaces, where the barrel touches the "V", are slightly spherical. That is all. And when I got back to our rest, it required only a little careful filing to do the trick. Immediately the accuracy of the rest improved. In fact it gave some very good 50-foot groups while merely resting on the bench in my shop, without even

being bolted down.

Out on the range, with the rest carefully bolted down and grouted on its concrete pier, it showed an equal and further degree of improvement, a 1-inch 10-shot group at 100 yards appearing the first time I put a 52 in the rest. (Incidentally, this group was fired by Parker Bowdoin, who had never used a machine rest before.) My niece fired the next group (10 shots), which appeared to be slightly smaller still, as seen through the spotting scope. Then I fired a group—but forgot to move the rest over. But through the scope this second group did not appear to enlarge the original one much, if any. I was so delighted at this performance that I again forgot to move the rest, and the third 10-shot group enlarged the now ragged hole in the paper but little more. I then decided to make a 50-shot group out of this 30-shot one, and in doing so got two fliers, enlarging the group to 2-9/16-inch. But 48 shots went into one hole, which measured 1-11/16 inches across outside centers.

At this point the hard-boiled small bore shot will probably

^{*}This Pope rest is illustrated in the September 1936 issue of The American Rifleman, on page 14.

say that these few groups do not prove anything, either about the rest or about the rifle. True; but they did show two things: first, that the rest could make a 1-inch group—I already knew the rifle could; and second, and more important, that shooters of slight experience could get good groups from the rest, demonstrating this machine rest's comparative independence of human

skill. The rest does, however, appear to show slightly smaller average groups with a good

shot pulling the trigger.

That was just before Christmas in 1936. We had a warm, rainy January here, with absolutely no wind between showers—ideal conditions for machine-rest work. A machine rest is even more affected by wind than is a bench rest, because any shooter of sufficient skill to

use a bench rest successfully will hold over, unconsciously, for a puff of wind, even though he may try

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Rear view, showing elevation and windage micrometers

not to. He may avoid doing this most of the time, but the habit of years will get him when he begins to tire after a long string of shots.

So, during this month of January I fired many groups, and learned various kinks about the rest. I also learned, incidentally, that a 52 fired fast could make good groups in weather which we consider cold here—just about freezing. I got into the habit of shooting "by the box," so to speak; that is, making five 10-shot groups at a time, expending in so doing a box

three guns and with four makes of ammunition—one of which latter would not shoot at all in the Johnson, was 1.38-inch (practically 13%-inch), all at 100 yards. You can't laugh that off as a test of what the machine rest will do.

In the list of group-sizes published herewith, note that Hamby's gun averaged 1.16, 1.13, and 1.07-inch for three "boxes" of

five 10-shot groups each, while in the last box, averaging 1.07-inch, the largest single 10-shot group measured 1.16-inch. Note also that all 50 shots touched a 1-inch circle. (All group measurements are to outside centers.)

Charlie left the gun with me for further test when he went back to Atlanta. He had brought it up in the first place to have Mr. Addicks put in a new barrel-one that would shoot at 200 yards. When Mr. Addicks saw the groups he refused to touch the gun, and told me to tell

Charlie not to touch it under any circumstances. As a result of this machine-rest test Charlie took his gun to St. Petersburg, where it won the 50-yard iron-sight match—with 40 shots so tightly grouped that Mr. Lister commented upon the fact that only one shot was far enough out of the X-ring to even touch the inside of the 10-ring. Of course we already knew that the gun would shoot up to 100 yards, but Charlie's complaint was that it wouldn't shoot at 200 yards. However, the official bulletins show that this gun took second place in the Wimbledon, and won the Swiss match with a new record for the range—99 bulls! Charlie loaned the gun to Bill Schweitzer

(whose gun had broken), and he took third place in the same match, with 40 bulls. This match performance would seem to confirm the machine-rest results pretty completely.

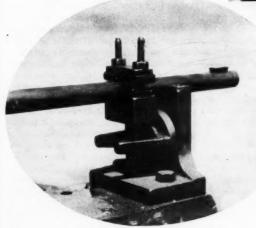
In testing I use Major Trull's 100-yard 5-bull practice targets, turned with the bullseyes away from the gun. A scope on the gun greatly speeds up matters by making it possible to quickly locate the next group. After one group has been fired, the cross-hairs are centered on that group. Then the setting is noted, and the next time you test that gun you merely put on the scope, set up your elevation and windage, and fire without having to "fish" for the target, as is the case when a scope is not used. You can also safely place your groups much closer together when using a scope.

Front "V", showing anti-cant clamp in place on barrel. In use a stop collar (not shown) is clamped on barrel ahead of the anti-cant clamp, to arrest movement of rifle when it is pushed

forward after firing

This rest does well with rather heavy-barrel rifles of com-(Continued on page 28)





of cartridges. The average of these five groups, after the gun has warmed up, will give you a pretty good idea as to what to expect from the gun and ammunition used.

Then Charlie Hamby spent a Sunday with me, bringing up his 52 with very heavy 8-groove Johnson barrel. This barrel, Hamby said, would not perform at 200 yards. Due to rain and wind, we could use the rest only from 12:30 to 1:00 o'clock, and from 2:00 to 4:45. And during this time we had to carry everything indoors several times because of heavy showers. Light showers we ignored—and they did not appear to affect accuracy at all.

During the time available we fired 47 record 10-shot groups, from Hamby's 52, my 52 heavy-barrel, and my Addicks 52 (the bore of which I had let rust). The average of all groups, from

The Complete Rehabilitation of the Flintlock Rifle

By T. B. TRYON

PART I: Recutting, Rebouching, and Refinishing the Barrel

BEFORE deciding to sacrifice a venerable rifle to the purpose of utilization, a number of factors should be taken into consideration. In the first place, any lover of old arms

must admit that to desecrate a splendid early or rare specimen of exceptional workmanship would be sacrilegious. Opinions differ, yet it would seem to the writer that such pieces, stained and polished by the hand of time, should find a final resting place in the wall case, as an exemplification of type—unaltered specimens of Americana. I voice this sentiment here, lest I be indirectly instrumental in causing an irremissible desecration of such

a specimen.

In many ways a later and less valuable piece is more suitable for the purpose of rehabilitating-an operation which necessarily entails the removal of many of the marks of age, and consequently often places the authenticity of the weapon in a questionable light. In fact a virtual wreck will suffice if there exists a trace of rifling in the bore, and the stock exhibits no breaks or bad cracks in the wrist or around the lock mortise. Of course scratches, bad dents, or lack of finish are of no consequence. Set-triggers and a late-type lock are desirable, but should the piece lack such it may be possible to add the former, and usually to replace an early, worn, or badly rusted lock with one of a late type, provided one can be found with a similarly shaped and slightly larger plate. Furthermore, the more common post-Revolutionary rifle will oftentimes display more or less ornate silver inlaymore striking to the eye and less liable to damage than the more valuable relief carving typical of the earlier pieces. The caliber is immaterial so long as it is under .45, as recutting will obviously enlarge the bore somewhat.

Having selected a rifle, it must be decided to what extent the process of rehabilitation is to be carried. While the bore and working parts should be restored to a condition cor-

Note: In this article I have applied to the different parts of the flintlock rifle the names originally given them back in flintlock days. Thus, what we today would call the hammer is here referred to as the "cock," the term "hammer" applying to quite a different member; etc.—Author.

responding to new, whether the exterior shall be refinished to the shrieking brilliancy which characterizes an arm fresh from the shop of the maker, or whether the gun shall be allowed to retain as far as possible the marks which distinguish it from a reproduction or restocked piece, depends entirely upon the tastes of the individual. In either case the interior of the barrel will require recutting—nor is the practice of recutting the bore a recent innovation, for the early American riflesmith was frequently called upon to recut and rebouche a barrel which was worn and rusted to the point of uselessness.

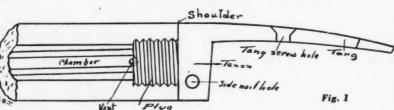
In the first place, the entire arm should be carefully dismounted, and the slender, frail stock placed where there will be no danger of its receiving a blow or other damage. First withdraw the ramrod from the thimbles. Then remove the side nails of the lock, and then the lock. Next back out the tang screw, and with a suitably shaped punch, remove the barrel keys or pins as the case may be. Exercise great care when removing the barrel from the barrel groove, for the fore-end is frail and the stock weak at the lock mortise, and with the support of the tang and lock screws removed, the danger of breaking the oil-soaked wood is considerable. Grasp the barrel and fore-end in the left hand about a foot from the breech, and place the piece across the knees, with the barrel down and resting on the left knee, but clearing the right by about an inch. Now strike the bottom of the wrist of the stock with the clenched right fist until the barrel, supported by the fingers of the left hand, is entirely freed from the barrel groove. Having first taken the precaution to unite the lock and side plate or plates by means of the side nails, the barrel should then be given a crucial examination in order to determine the

condition of the bore and breech plug.

To be able to remove the breech plug readily it is usually necessary first to plug the vent, introduce a quantity of kerosene or penetrating oil into the bore, and set the barrel away for a few days in order to allow the oil to soak down through the threads; though it may be possible to remove the plug without doing this. In any event, to remove the breech plug, place the barrel in a vise with leadsheathed jaws, and use a large-size openend adjustable wrench, or a monkey wrench, to grasp the tenon of the plug. If unable to loosen the plug, apply heat by means of a blow torch or gas jet. It will hardly be necessary to heat to more than a worm red. With the plug removed, buff the rust from the thread of the plug, and run a wire scratch brush into the tap of the barrel to loosen and clean out the rust. Then try the plug in the tap to ascertain whether removing the rust has reduced the diameter of the plug any appreciable amount, causing it to fit loosely. If the plug does not require the use of a wrench after entering three or four threads, or if the threads are not sound and sharp, the plug should be renewed. The shoulder should seat firmly against the breech of the barrel, nor should it be possible to turn the plug past its final position-which would necessitate its being backed off to allow the tang to be seated in the tang bed in the stock, with the result that the plug would be more or less loose in the tap.

If a new plug is required, the job should be entrusted to a careful mechanic in some job shop, unless you are equipped with a screw-cutting lathe. Such a mechanic

such a mechanic will, after divers explanations on your part relative to the intents and purposes of the thing, grasp the idea and turn out a very satisfactory job. By all means have the threads



of the tap recut, and insist that the plug butt tight against the bottom of the box when the shoulder seats against the breech of the barrel (see Figure 1). This may be determined by spotting with Prussian blue. If this is not done, the space will fill with residue which will necessitate removing the breech plug frequently in order to

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thoroughly clean the chamber, a procedure otherwise quite unnecessary.

Before beginning the task of recutting the bore, a simple but necessary tool must be made up. Secure a piece of drill rod somewhat longer than the barrel and of a diameter which will pass through the bore with considerable clearance, though the sturdier it is the better. Turn down about 2 inches of one end of the rod so as to form a shoulder, and cut a thread about 1/2-inch long on this same end (see Figure 2). Turn up a handle of hard maple, into which turn a threaded brass bushing reamed out to revolve freely on the turned portion of the rod. A washer is placed on each side of the handle, which is held on by a nut drawn down tight to the end of the threaded portion and the exposed end upset with a prick punch to prevent the nut from loosening. handle, of course, must revolve freely on the rod. Now reduce about 9 inches of

Washer Nut

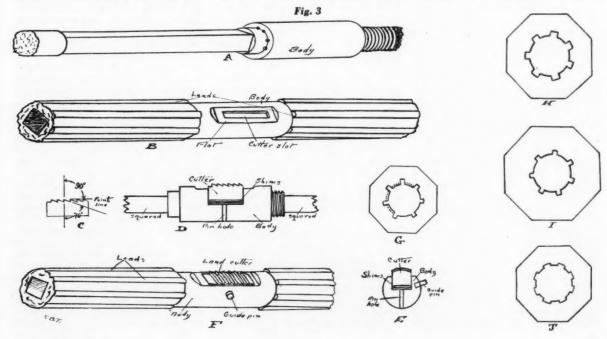
Washer Fig. 2 T. B.T.

the opposite end of the rod to a like diameter, and cut about 5 inches of thread on this end. The body which holds the cutter (see Figure 3-A) is made up of a piece of rod about 11/4 inches long and of a diameter which will not enter the bore. This is drilled and tapped to screw on to the threaded portion of the rod, upon which it is turned down tight, and upset on both ends with a prick punch to prevent its working loose. Put the rod back into the lathe and turn down the body so that it will just pass through the bore with no play. Now, with the rod still in the lathe, and the end supported by the dead center, file to square form the turned and threaded portions of the rod on either side of the body, as shown at A, Figure 3. It is a good precaution to cut some barbs on the corners of the squared portions, to aid in holding the lead casts.

We are now ready to determine the position of the cutter in the body. Insert

the end of the rod, including the body, in the muzzle of the barrel, as far as possible and still allow room to pour in the molten lead below the cylindrical part of the rod. Stand the barrel up in the vise, warm the muzzle with a blow torch, and fill the hore to the muzzle with molten lead, to form the cast above the body. When cool, pull the

cast out and scrape a shaving from the tops of the leads. Now push the rod through the bore from the muzzle, nearly to the breech-that is, if the latter is not breech-burned. If it is, keep the body back in the good rifling nearer the middle of the barrel. If it is necessary to leave the body down in the bore, heat the lead extra hot, and heat the barrel well with the torch. Pour in, from the breech end, what you would consider an amount of lead equal to that required for the first cast, but do not fail to pour in a continuous stream, for otherwise the cast will be in two or more pieces. You now have a lead cast on each side of the body. File a flat on the body in line with one of the leads (see B-Figure 3), place a flexible scale against each side of the leads, and scribe two clean lines across the flat on the body. The slot for the cutter is now let into the body between these lines. Remove most of the metal by drilling a series



of holes in the body, then cut the walls and bottom clean with a diamond chisel. The slot should be about 5%-inch long. Be particular to keep the walls of the slot parallel to the radius of the body.

Make the cutter from a piece of an old file. Anneal the file by heating to a dull red and allowing to cool in hot ashes. Grind the teeth from the file, and get it down to nearly the proper thickness, as well as width. It is easier and quicker to make a number of cutters from one strip of file. Dress the strip down to the proper thickness, and polish the sides. Usually a pitch of eleven points to the inch insures a relatively clean cut, and the cutter will in most cases work well if of such length as to include six teeth (see C—Figure 3), when recutting hand-forged

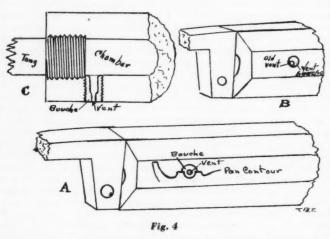
soft-iron barrels, which invariably have cinder holes, and occasional seams and hard spots. Carefully shape up the teeth with a needle file, checking the pointline frequently with a straight-edge in order to keep the teeth of uniform height. Hone the points, and finally fit each cutter to the slot. Particular care should be taken to keep the point-line parallel to the axis of the body when dressing down the ends and bottoms of the cutters, the teeth of which should be slightly below the surface of the leads when the cutters are seated in the slot. Each

cutter should fit snugly and accurately in the slot. It should be remembered that with this type of tooth-which cuts in one direction only-the cutter must be drawn through the bore, and should therefore be fitted with the teeth raked in the proper direction. With a No. 52 twist drill, drill a hole through the body from the side opposite the cutter, into the cutter slot (see D-Figure 3), which will admit of the cutter being removed from the slot by means of a stiff tempered pin or punch. To harden the cutter, heat to a cherry red in a charcoal fire, and quench in linseed oil. Polish the sides of the cutter, and draw the temper by exposing it to the heat of the fire until the polished surface acquires a dead straw color, and again quench. The teeth should then be retouched with a hard Arkansas slip. Nothing remains now but to melt off the old leads and cast a new set, as before described-taking the precaution to put the cutter in place as a guide.

When recutting, the barrel should be securely clamped about 8 inches from each end, to the heaviest bench available. With the barrel so secured, push the cast partly

out of the bore, lubricate it with cutting oil, and pass it completely through the bore a number of times without the cutter, to make sure that it works easily and will not bind. Do not at any time remove the leads entirely from the grooves in which they were cast. For the purpose of raising the cutter to the point where it will "bite," and for subsequently increasing the feed, the cutter is shimmed up with strips of 40-gauge (.0031") sheet steel (see D—Figure 3). Sheet steel is more conveniently handled than strips of brass or oil-soaked paper, as it may be manipulated by means of a magnet and scriber.

The cutter is now raised with shim stock for the first cut, snugly seated, and carefully introduced in the groove, after liberally flooding the bore with cutting oil.



Draw the cast slowly and steadily through the bore until the former projects just enough to allow the cutter to be removed-which should be done each time before returning the body through the barrel; for this type of cutter is, in effect, a file, and like a file, it cuts in one direction only and is dulled if allowed to drag on the return stroke. You will soon learn to tell when another shim is needed, by the way the cutter bites. If it cuts at all on this first stroke, it will probably be only in places, and you are ready to raise it with another shim. (Here it should be said that it is of the utmost importance to keep an exact tally of the number of shims used in this groove, as well as the number of cuts taken with each shim.) Again introduce the cutter, and draw it through the barrel. If it seems to offer much resistance, pass it through once, twice, or even three times if necessary, until the cutter fails to bite, before attempting to add another shim. When using this tool remember that the gullet in front of the tooth must receive the chips for the entire stroke, so do not attempt to hurry the job by taking too deep a cut. Light cuts

and plenty of lard oil will virtually eliminate chatter, as well as the possibility of the cutter binding in the bore. Continue to increase the feed until you are convinced by the way the cutter bites, that the pits are all removed. Then remove the cast, wipe the bore, and examine it in a good light—especially the breech—to ascertain whether or not you are well below the disintegration caused by hot powder gases as well as rust.

Prepare for the next groove by melting the casts off the rod, and casting new ones; being sure to place the cutter in the groove which you intend to cut next, before pouring the casts. Casting new leads for each groove may seem a waste of time, and so it would be if we could be sure that the grooves were accurately spaced. If the

headblock of the smith's rifling rig was accurately laid out, and the entire outfit not too worn and shaky. the grooves may be so evenly spaced as to allow using the same casts throughout the entire operation. However, this procedure is not advisable; for, while it is entirely possible that the leads would enter a set of grooves other than those in which they were cast, there is a possibility that the cutter would bear on one side or the other of the groove wall. This would tend to widen the groove, and might even leave a rabbet which would neces-

sitate making up a thicker cutter, enlarging the cutter slot, and recutting the groove in order to obtain the type of job that would satisfy the meticulous make-up of the average rifleman. Each groove should be cut to the same depth as the first, which is done by using the same number of shims and making the same number of cuts with each shim. If when finished, some of the grooves still display pits or roughness, deepen the one that appears the worst, and then cut the rest down to that depth.

When the grooves are completely recut, the identical procedure is followed in preparing to cut down the lands. The land cutter should be slightly wider than the lands. Shape it up in the same manner and with the same number of teeth as the groove cutter, but take particular pains to figure out what the new bore diameter is to be, and dress the surface of the cutter teeth down to the arc of a circle of bore diameter (see E and G—Figure 3). Melt off the old leads. Drill and tap, in the side of the cutter body, a hole of a diameter corresponding to width of grooves. So locate this hole that when a

down to enter a groove, the pin will center the cutter slot over a land. This acts as a guide for fixing the position of the slot whenever it is necessary to cast new leads for recutting the lands (see E and F-Figure 3). New leads are now cast, and the body marked out for enlarging the cutter slot. With the slot enlarged, a cutter fitted, and new leads cast, you are ready to recut the lands as soon as the muzzle of the barrel is marked so that you will know when you have removed enough metal to give the proper groove depth (see G-Figure 3). When recutting a land, you may be chagrined to discover that you are down to the mark while yet the bore is still rough-which will mean that you will have to make up a new body, and cut the grooves deeper. For this reason it is much simpler to take a few extra cuts for good luck when cutting the grooves in the first place.

This, incidentally, brings us to the subject of groove depth. If the pitch of the rifling in the barrel is one turn in from 52 to 72 inches, with seven lands and grooves, the latter being slightly narrower than the lands (see H-Figure 3), grooves of a depth of from .033" to .037" will be about right. If the rifle has the same pitch of rifling but narrow grooves (usually seven in number, but sometimes six), and lands within a few thousandths of being three times as wide as the grooves (see I-Figure 3), the grooves may average from .027" to .029" in depth. If the lands and grooves are of equal width (J-Figure 3), and the pitch about one turn in 48 inches, or sharper, the barrel was probably rifled to use a picket bullet and a very thin patch. The grooves of this type of rifling will average from .007" to .009" in depth, they being nearly as shallow as those of bores cut with a gain twist-which latter type of rifling cannot be recut by this method. because of the ever-changing pitch.

When the cutting is finished, you will probably find that the bore is relatively smooth, yet it will do no harm to pour a new cast, and slightly lap the barrel with flour emery and oil in order to remove the sharp corners which would tend to cut the patching-at least for a time. When lapping the bore pass the lap completely through, but not out of, the barrel at each stroke. Nor will much of this be required: just enough to knock off the sharp corners, smooth up any rough spots, and relieve any tight places; which latter you will readily feel with the lap. The latter are opened up by taking two or three short strokes at the tight spot, and then a number of full strokes; this being repeated until the condition is corrected. If necessary, remove 1/8-inch or more from the muzzle, true the end up, and relieve the grooves slightly, but not the lands.

Before refinishing the barrel, the vent

soft steel pin is screwed into it and dressed should be rebouched if it is enlarged to a degree which renders it disagreeable when the piece is fired. It need not be more than .060" in diameter, and should not be more than .080" at the most. Rebouching the vent will admit of changing its position if necessary, as well as of counterboring the bouche from the inner side, which shortens the actual length of the vent and considerably lessens the ignition period (see Figure 4). Monel metal is superior to gold or platinum as originally used for vent bouches, it being not only practically non-corroding, but also tougher and therefore less apt to blow out, and hence with it the diameter of the vent is less apt to be enlarged by the hot powder gases.

The position of the vent in relation to the face of the breech plug is of some importance. Nicholas le Clerc, gunsmith to Louis XVI, proved that "with regard to the recoil, the distance of the touchhole from the breech is of little importance,' but he concluded that a vent situated close to the face of the breech plug, as was the custom, was more difficult to keep clear than if located about 1/4-inch from the face of the plug. A vent located the thickness of the wall of the bouche, from the face of the plug (C-Figure 4), is entirely satisfactory.

The position of the vent in relation to the bottom of the magazine of the pan is of greater importance. The vent should slope up slightly from the magazine to the chamber, and be located about 1/16-inch above the bottom of the former-the actual distance depending of course upon the depth of the pan (see A-Figure 4). If located lower than this the train of powder in the vent would not be ignited until the priming had burned down to or below the vent, thus occasioning a perceptible lag between the igniting of the priming and the igniting of the train of powder in the vent. If it is necessary to move the position of the vent, plug the hole, and center and drill for the vent bouche, which should be of sufficient diameter to include the original vent (see B-Figure 4).

When cutting the thread on the monel metal bouche, use as a lubricant a compound of red lead and oil mixed to the consistency of thin glue, and carefully counterbore the bouche to the proper depth (see C-Figure 4). Turn the bouche firmly in to the end of its thread by means of a hand vise; then cut it off, file down flush with the barrel, and polish. The vent is



put in with a No. 53 twist drill, and the burr removed with a fluted center reamer twirled in the fingers. With a fine-cut file dress off any portion of the bouche which projects into the bore, and remove the burr with a small mounted carborundum point revolved by means of a pin vise.

If the browning on the barrel is badly worn, or if the surface is pitted, it is not difficult to refinish it. Polish the barrel down with two or three grades of emery, but do not burnish it. If it is pitted, drawfile it before polishing, being careful to preserve the angles and faces of the flats. Browning is not a "twenty-minute" job; rather it requires from three to five days to obtain a good rich dark brown finish which will be durable. The following is a recipe which the writer has found satisfactory for use on soft-iron barrels. The preparation should be kept in a glassstoppered brown glass bottle:

Having polished the barrel, plug the vent with a soft pine pin, and the bore with a piece long enough to serve as a handle with which to move the barrel. Remove grease from the surfaces of the barrel with a strong solution of washing soda, and from then on keep the fingers off the metal, wearing clean cotton gloves when handling the barrel. Apply the browning solution with a cloth dauber attached to a stick, and bear down to insure the acids "taking," but don't coat so heavily that the liquid runs, as the runs will show ultimately. The barrel is then set away in a room where the temperature is from 60 to 80 degrees, for about twelve hours-or until a good coat of dusty red rust has formed. The time required for this will depend a good deal upon the weather. When buffing off the coating of rust, use a very fine steel wire buffer which has been boiled in washing-soda solution. and wear clean cotton gloves to avoid finger-printing the surfaces. Do not bear down on the brush and burnish the surface -buff lightly and be careful not to cut through the finish on the corners. Boil the barrel for ten or fifteen minutes before each succeeding application of the browning fluid, which should not be applied when the barrel is hot or even warm. The number of coats necessary depends upon the depth of color desired. Six or seven coats should produce a deep brown, if conditions are ideal. The more coats applied and the cleaner the barrel is buffed, within reason, the richer and more durable will be the resultant finish. When the color is satisfactory, boil the barrel for twenty minutes or more to neutralize the action of the acid, and while the metal is still hot (it will dry almost immediately) wipe it over with a light coat of linseed oil, and polish by rubbing the flats with a smooth piece of rock maple.

Wind-blown Bullets

By T. A. LAMKE

THE effect that wind has upon the flight of a bullet is a curious thing. Confirmed target shooters know from experience that the high-speed .22 is more affected by a cross wind than is an ordinary .22. The high-speed gets to the target quicker, yet it is blown off its course more. The new 150-grain .348 with a muzzle velocity of 2920 f.-s. is considerably more sensitive to wind than is the 150-grain .30-'06 with a muzzle velocity of 3000 f.-s. Yet these bullets weigh the same and start out at very nearly the same speed. What is the answer?

We might suppose that the longer a bullet is in the air, the more it would be affected by a cross wind. But if we look at the examples cited, we see that that can

hardly be the case.

It really seems simple enough: If there is a wind blowing, the longer the bullet is in the air the more it ought to be blown off its course. But as we have just seen, that is not true. Why, then, isn't it true, and exactly what does happen?

In order to easily get at the problem we will have to make use of elementary mathematics, and employ in addition an odd quirk in reasoning. We can imagine certain conditions which we can control, and try to find out what would happen to the bullet under those conditions. Suppose, for example, that we shoot from a moving train at a target attached to another train moving parallel with us, and in the same direction and at the same speed as the train we are on.*

The essential conditions here are like those we encounter when shooting in a strong cross wind. The target and shooter are stationary with relation to each other in our train set-up, just as they are ordinarily stationary, and we have air moving with respect to them, just as we ordinarily have a wind blowing. The difference is that with the trains the shooter and target are moving with respect to the air, which we consider stationary, while ordinarily the air is moving with respect to the stationary target and shooter.

While this scheme may seem needlessly complicated at first sight, we may be better able to analyze what will happen to the bullet in the wind when we use the two trains. Our idea will be this:

1. We will see just how far behind the target the bullet will strike if we shoot from a stationary point directly at the target on its moving train, without allowing anything for lead.

2. We will see just how far ahead of its mark the bullet will hit if, from our moving train, we shoot directly at a stationary

3. We will finally put the two results together and find out what happens when we shoot from our moving train at a target which is moving parallel with us at the same speed, when conditions are like those we encounter on a windy day.

Where will the bullet strike if we shoot from a stationary point at the moving target? As every wing shot knows, we will shoot behind it. If we aim at the target, and fire, the target will be moving all the time the bullet is in flight, and the bullet will hit behind the target when it finally gets there. If the target is moving, for example, forty feet a second, and if the target is 400 yards away and the bullet takes a second to get there, the target will have moved forty feet from where it was when we shot, and the bullet will hit forty feet behind it. That takes care of point number one.

What if we shoot from our moving train,

going forty feet a second, at a stationary object 400 yards away, with the time of flight again one second? Will the bullet be carried forward forty feet by motion imparted to it by the train?

Evidently it will not be. While we might have a little difficulty in deciding just how far it will be carried forward, we can tell that it will not be forty feet. Although the bullet started out with a sideways velocity of forty f.-s., which it got from the train, it will not be traveling forty feet a second sideways when it gets to the target. It will have lost some of this velocity. Consequently, since it wasn't traveling forty feet a second during the whole second, it will not have traveled a distance of forty feet in that second. That is what we would think at first, anyway.

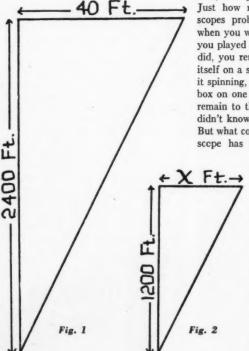
We are right in our general conclusion, but rather shaky in our method of arriving at it. We forgot to consider how the bullet itself will react to being shot forward with a velocity of, say, 2400 f.-s., and sideways with a velocity of forty f.-s. The bullet will not remain pointing straight ahead and fly through the air a bit crossways-which is what we were thinking when we considered this last proposition.

The bullet is rotating rapidly about its axis; it is spinning. It is like a gyroscope. Just how much you know about gyroscopes probably depends upon whether, when you were smaller than you are now, you played with a gyroscopic top. If you did, you remember that it would balance itself on a string, and that you could start it spinning, put it into its box, and set the box on one of its corners, where it would remain to the confusion of everyone who didn't know there was a gyroscope inside. But what concerns us here is that the gyroscepe has other and more complicated

tricks. The spinning bullet is a regulation gyroscope, and when it moves both forward and sideways it makes use of one of the gyroscope's more complicated tricks, and faces in the direction of its

travel.

You will recall that the bullet was going 2400 f.-s. forward and forty f.-s. sideways. When it starts out it is traveling slightly slantways; but not for long. A characteristic of the gyroscope exerts itself, and when the bullet has settled down to a fairly steady flight (a



* Originality cannot be claimed for this illustra-tion. The same one is used in the excellent British Textbook of Small Arms. But the method is a good one, and is here explained in considerable detail.

matter of a small fraction of a second and second. In three-quarters of a second, at feet was by multiplying the speed of the of a few yards of travel) it has its nose pointed in the direction it is going. From then on it follows its nose, and while it may lose speed, it travels in the direction to which it settled down in the beginning of its flight. The bullet doesn't go in the direction in which the barrel was pointed, but follows another line, at an angle with the direction in which it was shot.

The direction the bullet takes depends upon its forward and crossways speeds. The bullet we were considering went 2400 f.-s. forward and forty f.-s. sideways. That is the way it will travel, then. For every 2400 feet straight out, it will go forty feet sideways. It will lose speed, certainlyit will take longer than a second to get out

2400 feet. But when it has gone that far out it will have gone forty feet sideways. The bullet adjusted itself to those initial speeds.

and so it will move that way, regardless of time. The bullet's direction of movement is shown in Figure 1.

What we wanted to know was how far sideways the bullet was going in 400 yards, or 1200 feet. We can draw its path as in Figure 2. It is going 1200 feet out: how far sideways?

We see that one side of the smaller triangle is one-half the corresponding side of the larger triangle. The tri-

angles being similar, is it not reasonable to suppose that the side we want in the smaller triangle is also onehalf the corresponding side

of the larger triangle? This is, in fact, the case, it being in accord with the principles of geometry; and in going out 1200 feet the bullet goes twenty feet sideways.

There is another way to figure it out. We can imagine the bullet to be in a vacuum, where it loses no velocity, either forward or sideways. If the bullet kept its velocity it would take one-half second to go 1200 feet. If it went sideways at the same time, at the rate of forty feet a second, it would have gone twenty feet in that one-half second. Oddly enough, this method always works, because we are doing the same things here that we did before with the triangles.

Another example: If the distance had been 600 yards, or 1800 feet, the vacuum time would have been three-quarters of a

forty feet a second, the bullet would have gone sideways thirty feet. And this will check with the triangle method.

That is the way vacuum time can be made to enter into the picture. It doesn't come in unless we drag it in, but once there it is going to be handy.

So the answer to our second proposition is this: If we fire from a train moving forty feet a second at a stationary target 400 yards away, the bullet (with a muzzle velocity of 2400 f.-s.) will be carried sideways twenty feet.

Finally, then, we are ready to consider

train by the time of flight in a vacuum (one-half second). Then we subtracted the second from the first, to get the deflection. We could have obtained our answer by multiplying the speed of the trains by the difference between the time of flight and the vacuum time-the same thing that we did before, only in a different order. That makes our formula look like this: Speed of trains times the difference between the time of flight and the vacuum time. This last difference is what is called delay, so another way to put it is: Speed of trains times delay.

Whether the trains are moving through the air, or the air moving by the trains, is immaterial. If we replace the speed of the

trains going through stationary air by the speed of the air going by the stationary trains, we get the familiar

> formula for wind effect: Speed of wind times delay.

> We can easily see that, with a given wind and two different bullets, the bullet with the longer delay will have the greater deflection. That explains why the high-speed .22 is more sensitive to wind than the ordinary .22. The time of flight is shorter in the case of the high-speed. but the delay is greater; therefore the wind deflection is greater.

A good shape enables a bullet to approach the vacuum time as nearly as possible, and reduces the effect of the wind. The .348

and the .30-'06 illustrate that nicely. The .348 has a comparatively poor shape and loses speed faster than the .30-'06; hence it does not approach its vacuum time as nearly as does the .30-'06 with its better shape. Its deflection is correspondingly greater.

The amount of deflection is very nearly proportional to the range: If the wind blows a bullet three inches off at 100 yards. it will be six inches off at 200 yards, and twelve inches off at 400.

So far we have been considering cross winds at right angles to the plane of fire. That is, if the shooter is at the center of the circle and shooting toward 12 o'clock, we have been considering 3 or 9-o'clock But there are winds from all (Continued on page 31)

NONE ALLOWANCE

> what happens when we are on one train and fire at a target on another train moving parallel with us at the same speed and in the same direction. Evidently, if the bullet goes forty feet behind when we are stationary, and twenty feet ahead when the target is stationary, we must combine the two when both shooter and target are moving; and we find that the bullet hits twenty feet behind under such conditions.

Fig. 3

Now, the way we got the forty feet in the beginning was by multiplying the speed of the train (forty f.-s.) by the actual time of flight of the bullet (one second); and the way we got the twenty



Fig. 1

Choke—Its Origin and Functioning

By A. P. CURTIS

THERE are two great mysteries about the choke in a shotgun barrel, one being who first invented it, and when; and the other, why choking a barrel tends to centralize the shot pellets. It is, and probably always will be, a moot question as to the time choking (as we know it) was first discovered, and who was the discoverer.

W. W. Greener, in his book The Gun, first published in England in 1881, says:

"The principle of choke boring originated with the Spanish gun makers about 1781." And further: "Deveux in Le Vieux Chasseur published in 1835 said: 'I have seen these results produced by a barrel slightly opened at the muzzle, choked in the center and freed at the breech. I have seen the same results by a barrel choked two sizes at the muzzle.'"

Greener also stated that "gunsmiths in

England in 1789 were advertising matchless guns for sale bored on an improved plan . . ."

J. W. Walsh, in his book *The Modern Sportsman's Gun and Rifle*, published in England in 1882, informs us that the *London Field* Committee awarded the Lane Prize of 10 guineas to a Mr. W. R. Pape of Newcastle (England), giving the following reason for so doing. To quote:

"It appears that in May, 1866, Mr. Pape provisionally protected a new plan of boring guns in which the muzzle was left one size smaller than the barrel, which was bored out to within an inch of that part and then gradually enlarged up to the muzzle itself, the patent, however, was not proceeded with but the germ or principle of the boring now adopted is clearly there, though the proportions are

different and the results might not have been the same. The 10 guineas have therefore been sent to Mr. Pape."

Greener also stated that "one J. L. Johnson of Young America (now Monmouth), Illinois, issued the following circular in 1872: 'Attention, Sportsman! Having discovered the principle by which a gun can be made to shoot close, I wish to call the attention of the shooting community to the fact that I am now prepared to bore shotguns and guarantee them to put the whole charge in a 30-inch circle at 40 yards, price \$10.00. . . . "

Fred Kimble, now of Los Angeles, California, in an article published in the December 1933 issue of *Outdoor Life*, states that he invented choke boring as used today, in 1868, citing the several experiments he made before hitting upon the correct shape and constriction. He told

Fig. 2



his secret and sent a pattern to "Joe" Long, a hunting companion, who ordered a gun chokebored from a Boston gunsmith by the name of Tonks.

In his book Greener also claims to have been the first to successfully choke-bore gun barrels, in 1874. In their (Greener's) 1933 cata-

logue they claim to have "introduced" choke boring in 1874, or eight years after the *London Field* had awarded a prize to W. R. Pape for a system of boring, because "the germ or principle was there."

Fred Kimble states that he accidentally discovered choke boring by reaming out

the bore of a muzzle-loading gun barrel, leaving a tapered constriction one inch from the muzzle: but this was what we today term "overchoked." The firing results convinced him that his idea was wrong, and rather than take the gun apart to remove this constriction by inserting a reamer into the bore from the breech end, he attempted to cut it out from the muzzle end, but did

not cut all of it out. In fact he only reduced the constriction, and left—at the extreme muzzle end—what we today term a "choke margin."

Did he thus discover or re-discover the choke principle and shape universally in use today? When it took eight years for a European gun-maker (Greener) to improve upon Pape's system, it is reasonable to assume that Kimble had not at that time heard of the system.

On the other hand, "Joe" Long, the

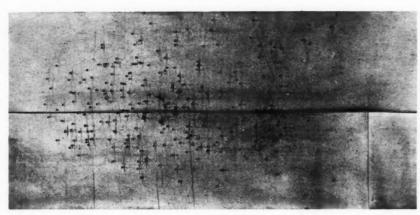


Fig. 4

hunting "pal" to whom Kimble imparted his secret, and to whom he sent a pattern in proof of what he had accomplished, was the same J. W. Long who, according to

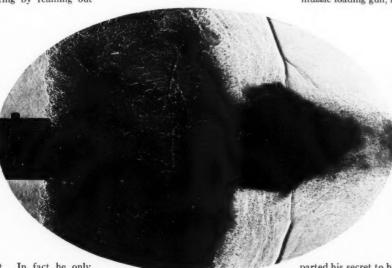


Fig. 3

Greener, wrote a lengthy chapter on the history and origin of choke boring, in an interesting work American Wild Fowl Shooting, in which he said: "I have positive and reliable proof of its [choke boring] having been practiced in this country [America] according to the most approved manner of the present day [early '70's],

over fifty years ago. The earliest person whom I have been able to trace a knowledge of it to, is Jeremiah Smith, a gunsmith of Smithfield, R. I., who discovered its merits in 1827. I have evidence of several disinterested parties to the effect that Mr. Smith so bored guns at that time. Mr. N.

Whitmore of Mansfield, Mass., in his day a noted rifle maker, worked for Mr. Smith, learned this method of boring from him and afterwards practiced it while doing business for himself. The writer, being dissatisfied with the shooting of his old muzzle loading gun, he in conjunction with

a friend, Mr. F. Kimble, each agreed to obtain a new gun apiece, to be the closest shooting weapons to be obtained. Mr. Kimble ordered a muzzle loader from a gunmaker of Peoria. Ill., and I a breech loader built in Boston. This gun, which was the first choke bore the writer possessed, he tried in July, 1870. . . .

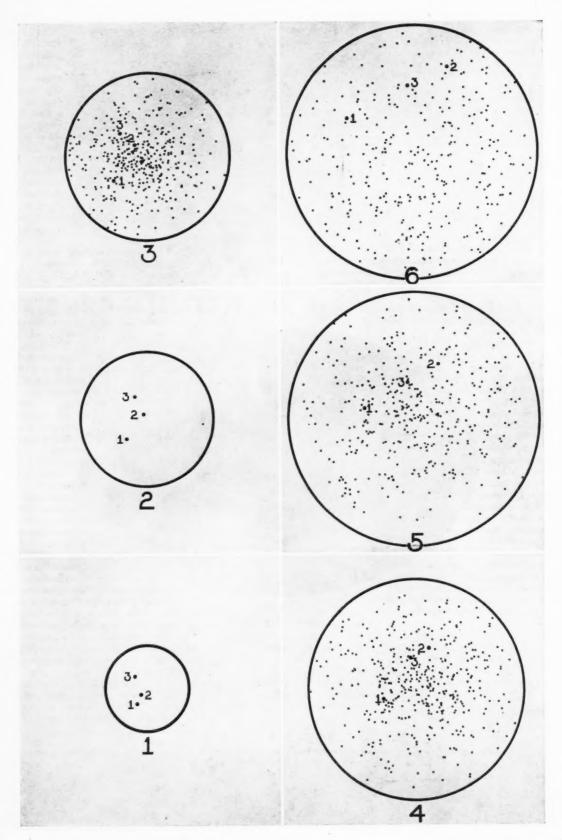
All of which tends to show that when Kimble im-

parted his secret to him, "Joe" Long began looking up the origin of choke boring, only to find that instead of being new, it had been in use for a great many years before 1868. From this it will appear that Kimble was not the original discoverer of the choking of smooth-bore barrels as we know it today.

A "roughening of the muzzle with a file on a long rod" as done by the Spaniard about 1781, or English gunsmiths announcing "barrels bored on an improved











plan" in 1789 and "barrels slightly opened at the muzzle, etc.," in 1835 (Greener's The Gun), do now throw much light on choke boring as practiced for the last 67 years. It only shows that many persons in many countries were striving to obtain better control or centralizing of the shot charge and a greater killing range than were possible with the then-prevailing cylinder bores.

Therefore, if the authorities quoted can be relied upon as being accurate, I see no other conclusion than that choke bor-

ing is an American invention, and that Jeremiah Smith of Smithfield, R. I., was the inventor; the year being 1827. On the other hand, if Smith's method of choking, as was later Pape's, was not "according to the most approved manner of the present day," as claimed by Long in the early '70's, then Fred Kimble was undoubtedly the inventor of our present shape of choking; and the year was

It is a well-known fact that Greener, who in England pioneered in choking as it is done today -claiming to "have been the first to successfully choke bore gun barrels in " had had a 1874. gun sent to him by Kimble to have his choke measured and duplicated, before the year 1874.

Further, when Greener in their last catalogue states that they "introduced choke boring in

1874," they refer to its introduction in England. Undoubtedly it was a duplicate of Kimble's choke. Also, in the field trials conducted by the London Field in 1858-1866 and 1875, it was not until the last trial that Greener's guns won, and they were then all choke bored; their 8-bore being first in class 1, their 12-gauge first in class 2, while a 20-gauge was first in class 4.

Effect of Choke Upon Shot Charge

Since its inception, many theories have been advanced as to why and how the choke centralizes the distribution of shot pellets. Some believe "the elongation of the shot charge in passing through the constriction or choke, acts not unlike the nozzle of a water hose, etc." Another has defined choke as "that peculiar formation of bore by which the divergence of the pellets of a charge of shot, in their flight, is greatly modified and controlled." We also have been told that choke "is merely a means of negativing shot pressure."

Another theory advanced is that "the charge is encased in a leaden shell of their

my having made many firing tests to demonstrate its tenability. One of these tests will later on be described and illustrated.

The Peters Cartridge Company claim that this problem has been made clear by photographs of shot charges in flight from a full-choke and cylinder-bore barrel. These photographs, termed "sparkographs," are taken by a special electric photographic apparatus that exposes the negatives for only one-millionth part of a second. The late Philip P. Quayle, D. Sc.,

while with the United States Bureau of Standards, perfected this system of making spark photographs, and described it in detail in numerous technical publications. Upon severing his connections with the Department of Commerce, Doctor Quayle joined the laboratory staff of the Peters Cartridge Company, and had a little difficulty at first in convincing his associates there of the extreme value of spark photography in ballistic work.

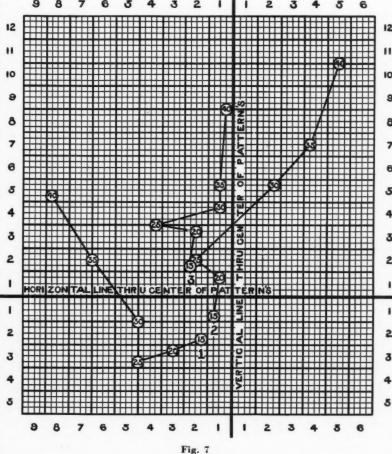
The Peters Ballistic Institute is the only ammunition laboratory in the world using spark photography in their routine work, and the Peters firm deserves great credit for this important advancement.

Because of their ballistic value, and as they seem to fit into the picture I am trying to paint, I have secured from

Peters several sparkographs, with permission to use them.

Figure 1, showing a charge of No. 6-C shot in flight four feet from the muzzle of a 12-gauge cylinder-bore barrel, certainly vividly illustrates the disturbing influence of wads and gas blast. The pressure of the wads upon the rear of the shot column has affected the shot in the entire length of the charge.

Figure 2 depicts a charge of No. 6-C shot at the same distance from the muzzle of a 12-gauge full-choke barrel, illustrating how the shot column has been elon-



own outer pellets which have been dented and welded together by the choke, this later breaking up into individual pellets during flight."

It has been claimed that "it [choke] causes the pellets to cross the axis of the bore in flight and arrive at the objective at the opposite side from their original position when passing through the choke, this deflection being caused by the tapered 'lead' from the bore diameter to that of the muzzle margin." This latter theory is the most reasonable, in my opinion, after

gated or strung out by its necessary reformation in reducing its diameter so as to pass through the constriction, or choke. This stringing of the pellets is peculiar to shot from a choked barrel only. The explanation runs: "As those pellets behind the first one or two layers suffer a velocity loss as they pass through the choke, the loss becoming more pronounced toward the rear of the shot column, the progressive loss of velocity produces the stringing effect at the muzzle of the barrel. The stringing is accomplished in such a manner that the wadding does not affect the lateral dispersion of the shot except a small percentage at the rear of the charge after it has emerged from the muzzle * * * if the shot were not strung out, the wadding would influence the lateral dispersion of practically all of the shot charge. . . ."

It sounds logical, and seems to confirm the theory advanced by General Baden-Powell and others many years ago. It is a well-known fact that the powder wads from a cylinder-bore travel farther than those from a full-choked barrel. On the other hand, it seems incredible that the choke, or anything else, could retard the velocity of wads propelled by the gas at a barrel velocity of from 1200 to 1300

feet per second.

After viewing Figure 3 there should be no question as to the ability of the wads and gas blast to "pancake" and divert shot pellets: for here we have a wonderful photographic reproduction of the terrific blast of gas that takes place upon escaping from a confining barrel. Note the wads pressing upon the rear of the column of shot, and the agitated air in front of the charge, that has been forced out of the bore.

The wad contact shown in Figure 1 is seen to be affecting the entire shot charge, while in Figure 2 it is disturbing only a few pellets at the rear of the column, suggesting that something has retarded the speed of the wad. On the other hand, this photograph could also support the theory that wads are not retarded, and that the shot does not experience any velocity loss: but rather that the shot at the forward part of the column has experienced a slight gain in velocity by being forced through the choke, just as a water-hose nozzle will, with the same pressure, throw a smaller stream a greater distance. But a charge of shot does not have capillary attraction to hold it together, as does water

The Cutts Compensator has demonstrated what may be accomplished when all gas or wad interference has been removed from a column of shot, by producing a better killing pattern and at greater ranges than is possible to obtain from a barrel with the conventional choking.

I doubt if this vexing problem can be

rightly said to be completely solved. I believe that these wonderful spark photographs show more than is claimed for them. We will refrain from considering the cylinder bore, as no manufacturer today puts out a true cylinder barrel. All of them leave a slight constriction in the muzzle (not over .005-inch), as it was found that a shot charge from a true cylinder barrel was subject to the whole gamut of damaging influence on shot, except only the normal deformation caused by passage through a choke.

Figure 4, a sparkograph showing the shot column from a cylinder-bored barrel 371/2 feet from the muzzle, and Figure 5 showing the shot column from a fullchoked barrel at the same distance, illustrate the formations which are to be com-

pared later on.

In my opinion the sparkograph of a shot charge taken soon after emerging from a full-choke barrel also shows that the pellets of shot in the central part of the charge fly in a fairly straight line toward the target, while those contacting the "lead" or tapered walls of the choke. as well as those closely adjacent, are deflected from their original line of flight. It is obvious that all but the first one or perhaps two layers of shot must have their original grouping entirely changed and elongated before they can pass through the constriction, and may therefore suffer a velocity loss, as claimed. The fact that "the wadding does not affect the lateral dispersion of the shot" is because the powder wads have also experienced a slight velocity loss as well as part of the shot. In fact they were retarded while the shot column was being elongated. But whereas these strung-out pellets in the photograph appear to be flying straight, I contend that a great many of them are traveling at a tangent. Those contacting the taper of the choke, as well as those closely adjacent, are deflected and guided so that they cross to the opposite side of the shot column during their flight, and register on the opposite side of the target, while those in the central part carry on in a comparatively straight line.

The truncated cone-shaped choke receives the charge traveling at a barrel velocity of approximately 1300 feet per second, and through this choke the charge has to "pour." It changes its formation in doing so, the forward and central shots being untrammeled and continuing on their original path, while the others are acted upon directly or indirectly by the tapered choke, which changes their original formation as well as the direction of their motion. They are deflected at an angle equal to the angle of the choke's taper, and these lagging pellets that show as strung out in the photograph, are destined to cross the line of flight and register on the opposite side of the target.

years ago to prove that this old theory was correct. The shells that were used had their shot charge composed of two sizes of pellets, so that these could be identified on the targets. A thin card was placed in the shot chamber of each shell, and 5/8-ounce of No. 9-C shot loaded on one side of the card, and 5/8-ounce of No. 6-C shot on the other side. After making a mark on the outside of the shells to show the location of the larger shot, and removing the card separator, shot wads were installed and the shells crimped. These were fired in different guns, some with the No. 6-C shot at the left in the shell chamber, some with it at the top, some at the right, and some at the bottom; and invariably the patterns showed that the bulk of the larger and smaller shot had struck the targets in the opposite position to that which they had occupied in the gun. In order to further demonstrate just

In an article on this subject published

in this magazine in December, 1933, I

described some firing tests made many

what happens, I recently made a series of targets spaced 5 yards apart and all made at one firing (page 24), using only one shell that had originally been loaded with 11/4 ounces of No. 71/2-C shot. First the shot charge was removed and three pellets of BB shot installed at the junction of the outmost powder wad and the paper wall of the shot pocket. After marking the outside of the shell to show the exact location of these BB pellets, the load of 71/2-C shot was replaced, was covered by a wad, and the shell recrimped. In loading the gun, this shell was installed so that the BB shot were at the exact bottom of the shell chamber, or very

nearly so.

After making a total of 7 patterns at one time with this doctored load, circles were scribed on each pattern, of a diameter sufficient to include the bulk of the registered shot holes. In the pattern at 10 yards, the three holes made by the large shot could not be identified, but at 15 yards they were well defined. In examining these several patterns it will be noted that the three BB shot gradually rose above the center, until they registeredon the last pattern, at 40 yards-near the upper periphery of the 30-inch circle.

In pattern No. 1, at 15 yards, the three BB shot registered close to the center of the circle drawn to include the entire shot pattern, which in this case was 10 inches in diameter. These three BB shot holes were then assigned numbers, the lowest being No. 1, the one nearest the center being No. 2, and the upper one No. 3, this to enable tracing the upward movement of each pellet individually.

In pattern No. 2, at 20 yards, a 16-inch circle was required, and BB pellets Nos. 2 and 3 had moved upward in their 5-yard

(Continued on page 30)

Federal Firearms Registration

By C. B. LISTER

ATTORNEY GENERAL CUM-MINGS has been quoted as having said: "Show me the man who objects to registering his guns and I'll show you a man who shouldn't have a gun." That is a fine resounding phrase and a fine outstanding example of the Attorney General's complete ignorance of his subject.

The American people are in no mood for fine phrases. The demand today is for

practical measures.

From the practical standpoint, then, why does the average shooter feel that Federal Gun registration will work a hardship on him without any compensation in the form of quicker apprehension or more certain and speedy conviction of the criminal?

First: Because the Federal Government possesses no local police power. The registration of firearms by the Federal Government would not of itself prevent anyone, anywhere from legally purchasing any kind of gun. Federal registration would entail no requirement that permission of a Federal agent be obtained in order to purchase or possess a gun. Some editors seem not to understand this important point. Known criminals could still legally possess guns in New York State or any other State merely by obtaining local permits just as they have done in the past-even while reputable business and professional men were being refused such permits!

Second: Because the Federal Government, by registering a gun, could not under the Constitution thereby give a man authority to possess or carry that gun. The citizen would still have to comply with all local ordinances and State laws. Even though the Federal registering officer might know the gun owner to be a thoroughly reliable person, it would still remain within the power of the local police to refuse a permit to possess the arm which the gun owner had registered in compliance with the Federal law. The local police, having refused to grant a permit, could then in New York and some other States confiscate the gun and prosecute the owner for having possessed a gun without a State permit, even though he had complied with the Federal law!

Third: Because dangerous criminals operate to a great extent with stolen firearms, the majority being stolen from Regular Army, National Guard, and R.O.T.C. armories, police department arsenals and scout cars, and dealers. The theft of Government arms is already a Federal offense and the serial numbers of such stolen arms are already a matter of record. Similarly, the serial numbers of arms

stolen from dealers are already a matter of record with the manufacturers.

Although the serial number is a matter of record, there would be required also the fingerprints and the photograph of the owner of every firearm in the country, and this includes every shotgun, every rife, every pistol, as well as sawed-off shotguns and machine guns.

We believe a murderer should be tried and convicted for murder, and sent to the electric chair. We think it is folly to provide legal machinery whereby a murderer may be tried for possessing an unregistered gun, given a light sentence, and a little later returned to society.

A small proportion of the criminal world's guns are stolen from individuals. What would be the effect of Federal registration in such cases? Would it aid apprehension or conviction? The gun would obviously be registered in the name of the honest man from whom it was stolen! Should this gun turn up later at the scene of a murder, what record would be available to aid the police? Merely the fact that a certain man, heretofore known as a reputable citizen, had been the last one to legally own the weapon, and that he had reported it stolen some days, weeks, months, or years back. There would be absolutely nothing to show who the crook was who stole the gun, or whether the original thief was the crook who had used it during the crime currently under investigation!

Suppose the registered owner of a weapon is away; his home is burglarized; it is ten days or two weeks before he returns. Meanwhile a murder is committed and the police find the murder weapon. which is registered in the name of the man who is out of town! It has not been reported stolen (because the owner does not yet know his home has been burglarized). The perfectly natural thing for the police to do is to broadcast a "lookout" for the missing owner of the gun. An honest man thereby becomes a "fugitive from justice" without knowing it, and faces the ignominy of arrest at his vacation hotel, and the notoriety in his home town papers of having been called upon to prove an alibi in a murder case. Far fetched? Not at all to anyone who knows the methods of operation employed in most American police departments. And the pathetic part of the picture is the fact that while the police are following the obvious "lead" to the innocent man, the real trail to the actual murderer is growing dimmer-and the registration of the gun has harmed rather than helped the apprehension of the criminal.

What if the theft is promptly reported to the "nearest Collector of Internal Revenue"? Several days will elapse before the letter is received and recorded at the Collector's Office. Meanwhile the gun is found after being used in a murder. The police mind in all such cases would work (reasonably, too) along these lines: "The man who registered this gun was smart. How do we know he didn't report his gun stolen just to throw us off the trail! We must make him prove an alibi."

The point must be kept clearly in mind that while the proposed Federal Registration of firearms implies Federal enforcement, the actual result would be use of the registration records by local police in probably 100 cases to every one case in which U. S. Government enforcement agencies would have jurisdiction.

Fourth: Why does a citizen object to registering his guns when he does not object to registering his automobile? Because car registration is handled by State authorities who alone have the right to combine registration with permission to possess and use! The proposed Federal registration of guns could not carry with it permission to possess or use. The difference is obvious and conclusive!

These are some of the practical reasons why sportsmen, through The National Rifle Association, are opposed to the Attorney General's proposal for a Federal Firearms Registration Act. In opposing such a law we do not, however, say that nothing can be done about the use of firearms by criminals. A bill is now before the United States Congress which we believe will be materially helpful. That bill was drafted by the Senate Crime Committee, which gave more study to the subject than has ever been given before, or since, by any Committee of Congress. It is the Copeland Bill-Senate No. 3. This bill passed the Senate at the last session and will be reported out of Committee for action by the House shortly after the regular session reconvenes.

The National Rifle Association urges the passage of Senate 3 without delay, because it strikes directly at the *criminal* use of firearms instead of indirectly through the honest citizen's possession of a gun; because it gets down to the practical side of the case instead of the theoretical side; because it adds no new taxes on the shooter; and because it will place another weapon against the interstate criminal in the hands of the Attorney General's own Federal Bureau of Investigation instead of in the Treasury.

When Hunters Were Also Hunted

By GILBERT IRWIN

IN PIONEER days in the eastern mountains and in the Ohio and tributary valleys—the "first frontier"—hunting left. Homespun linen, deerskins and other was a necessity, both for self-preservation from fierce bears, wolves and other wild animals, and for food supply. Following the Revolution and the border Indian wars, every person, even those of the feminine sex, was skilled with the rifle; and, aside from the cultivation of the sparse farms in the woodlands, hunting offered about the only source of profitable effort, providing as it did the meat supply and the pelts which often formed the medium of exchange.

You've heard that old tale of the mountaineer buying his postage stamps with a coonskin and getting his change in muskrat pelts. That was often an actual fact when applied to purchases of ordinary merchandise at the trading posts of the "first frontier." When the British set the style by offering bounties for scalps during the Revolution, the Colonies countered with premiums for the scalps of Indians, the price running as high as \$150 for a dead redskin or a bit of his tously hair as evidence of the killing; and, as scalps were much more easily transported than live Indians, scalp-lifting offered an occupation and a good source of revenue for the expert pioneer woodsmen.

Then followed the bounties upon wild animals, from bears and wolves down even to squirrels and crows, for the prevalence of all kinds of wild life made it almost impossible to raise crops of any kind on the primitive farms with the crude implements and methods then in vogue. Skins and furs also furnished much of the pioneer's clothing-trousers, coat, cap, gloves, boots or moccasins-for they dressed much in Indian fashion.

The hunting skirt was a queer garment, a much more complete one-piece body covering than is feminine dress today. It was a loose garment reaching to the knees. made wide to lap over when belted, and had a fur or leather cape which covered the shoulders, and which was usually fringed or fantastically decorated, the idea seemingly having been to display the most brilliant colors regardless of the effect upon the hunted. It might be a good outer garment these days as barrage against the army of dangerous hunters in deer season. In the pockets of the shirt were carried provisions, ammunition, tow for wiping the rifle, and other articles of

The bullet bag was fastened to the belt

pelts furnished the materials for this queer costume. A man's life and the lives of his family depended upon the trusty rifle in many ways, and every boy looked forward to the time he would become the owner of one of those ancient 6-foot-long, 10 or 15pound protectors and game-getters.

In those days wolves were dangerous, and black bears raided the mountain clearings, attacking humans, for then they had not yet learned to fear generations of guntoting men. It was no uncommon experience for bears to chase travelers on the mountain trails, and for wolf and panther packs to tree woodsmen, for, while it was possible to shoot one or more of them, no man or small party was a match for dozens of hungry, howling wolves or panthers.

Crist Shockey, a pioneer hunter of the Pennsylvania mountains, was treed by a pack of wolves one evening while returning from a hunt. All night long they howled around the big pine in which he perched, in zero weather, at times devouring one of their own number who became injured, clawing the tree and leaving marks which could be seen many years after. When daybreak came they sought their dens, and Shockey climbed down and made his way to his cabin, where he was long recovering from frostbites of that nervewracking night. Near the cabin was a spring which never froze over and to which bears, wolves and panthers came for water. The old hunter caught hundreds of them in traps and picked them off with his rifle, and to this day it is called Wolf Spring.

Shockey was a German, a soldier of the Revolution, who located in the western Pennsylvania mountains after the war as a trapper and hunter. He marketed his pelts each year in Hagerstown. In 1807 he took his winter catch east on two pack horses, and, after making his sale, stopped at a store to buy a copy of the "Hagerstown Almanac," which even at that early day was found along with the Bible in every frontier cabin. Shockey could not read, and when the dealer offered him a bargain he bought a large bundle of the almanacs, expecting to sell them at a good profit on his way over the mountains: but when he offered them for sale it was discovered that the dishonest dealer had sold him the useless almanacs of the previous year!

In the mountains, near Shockey's cabin at Wolf Spring, lived James Kelly, another early woodsman, and the two often hunted and trapped in company. One morning Shockey went to the Kelly cabin, but found only traces of human hair and blood, and, following the trail, found the hunter at a nearby stream washing the blood from his head and face. He had bunked close to the cabin walls, and a panther had clawed out the chinking and then reached in and seized Kelly by the scalp and about snatched him bald-headed.

Bounties ranging from \$8 to \$10 up were offered by the different frontier counties for wolf, panther and bear scalps. The hunters usually cashed in their scalps in the counties offering the highest bounties, and in one case a cunning mountain hunter on the border of Westmoreland and Somerset counties, in Pennsylvania, placed the carcasses of dead horses and cattle just across the line in the former county where the bounty was \$20, double that in the latter county, and thus he made his kills at the highest profit and without resorting to subterfuge to prove that the wolves and panthers were actually killed within that county.

A HOME-MADE MACHINE REST

(Continued from page 15)

paratively light recoil. At its best with the 52, it nevertheless gave some very good groups with several Hornets, and with a .25-35-all having rather heavy barrels. It did not do so well with my 54-.250-3000, though the vertical measurements were 11/2 inches and under, and the horizontals 3 inches-at 100 yards. This standard 54 barrel is quite light, of course.

And now for the rest itself. The pictures show about what it is like, and indicate how it is used. I think Mr. Addicks still has the patterns for the castings we used in its construction. The drawing is only approximately correct. Were I to have another one built I would make only minor changes-if indeed any at all.

As to the method of operation, there isn't much to tell. I pull the trigger with my thumb against the guard, and keep my whole right arm as limp as possible. Slightly better results seem to be obtained when the operator stands to the right of the rest. The trigger-pull appears to have a slight effect upon performance, and I have built a pneumatic trigger-puller which should eliminate this error. However, I doubt if it will greatly improve accuracy. The gun should be pushed forward "into battery" very gently. A heavy 52 will recoil about 1/8-inch, and when it is pushed forward again it should be stopped in its motion by a collar, clamped to the barrel, striking the forward V. The finger projecting downward from this barrel clamp should not strike anything, but merely rest against a straight edge when firing, to eliminate cant or any change in cant, as shown in the illustrations.

is speed of operation, and the fact that it does not get tired. You can shoot fifteen 10-shot groups in an hour, and your eyes don't blur and cause a spreading of the groups toward the end of the string, because you do not depend upon your eyes for results, and do not strain them. When I move the rest over I look through the scope sight merely to locate the next group, and look at the finished group through the spotting scope. That's all.

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One fact which is just as apparent with a machine rest as in the case of any other kind of shooting, is that the small bore rifle has its off days, on which it shoots poor groups-even with its chosen ammunition. This is not due to wind: I have seen it happen under perfect conditions.

The great advantage of a machine rest ever, it should be said, I am not a good shot. The machine rest, on the other hand, has given several 34-inch groups, quite a few 15/16 and 1-inch ones, while its best 10-shot group to date measures just over 11/16-inch.

> What you really want to find out from a machine rest, and what you really want to know about a rifle, is "What sort of accuracy can I count on-in the match two weeks from now?" For this information, study the larger "boxes" (series of five 10-shot groups) made in a good machine rest-on an off day for your gun, and you won't be far wrong. Don't pay any attention to the small groups. They are more or less due to luck. And don't count on the averages. But give heed to your largest groups and you will see why

morning of the experiment was particularly hot, and the bright sun shone unmercifully as we brought our paper targets up on the line. All this preparation took hours, but finally, after checking and rechecking, we were ready to fire. By this time it was hotter than ever, the wind had come up, and considerable mirage was running.

Aiming at the 50-yard target, Doctor Ellis commenced firing, from an improvised rest. The 50-yard target showed a half-inch group, and at 100 yards we had an inch group. From 100 yards onward the effect of the paper targets upon the flight of the bullets increased. Groups widened out beyond 100 yards, but maintained a consistent pattern. Obviously, however, passage through the paper targets was causing an increasing amount of deflection of the bullets from their normal line of flight. This was proved when Doctor Ellis shot groups at 200 and 250 vards without screens.

In these experiments we settled upon two loads as being the most accurate: 17 grains of HiVel No. 3 with the Winchester soft-point 45-grain bullet, and 161/2 grains of HiVel No. 3 with the Lovell-Sisk 50grain sharp-lead-point jacketed bullet. These gave the best results in our particular Winchester 54 rifle chambered by Hervey Lovell.

Several one-day hunts were taken. We used the 45-grain soft-point Winchester bullet for crows, chucks, and hawks, and the 50-grain Lovell-Sisk load for coyotes. Both loads are superlatively accurate, and require no change of sight setting for hunting. Kills were made repeatedly on crows, hawks, and chucks up to 200 yards. We found, in hunting, that in any wind in which we could hold for close shooting. the effect of the wind on the bullet could

be practically disregarded.

In June we hunted for a week east of the Cascade Mountains in Oregon and Washington, and both loads were found to be extremely satisfactory under variable hunting conditions. It was on this 1200mile trip that a chance was afforded to test the Lovell-Sisk 50-grain sharp-softpoint bullet on a large coyote under unusual circumstances. My son and I had sighted four woodchucks on a rock, taking their early morning sun bath. I was all set to shoot, when a coyote barked on the hill above us. It is common to hear coyotes barking and howling at night, but never before had either of us heard one yapping in broad daylight. Thoughts of the four chucks vanished as we scanned the hillside for a glimpse of the gray marauder. I swapped the 45-grain for a 50-grain load. As I closed the bolt, I spied the coyote moving slowly from left to right along the skyline. He was oblivious of us, partially concealed as we were at the bottom of the hill in the brush and

MACHINE REST GROUPS—100 Yards—My 11/4 x 28 Addicks—barrel 52—Super Match. Measurements to outside centers. Gun not cleaned—left fouled with Super Match.

		S	eptember 25	-Perfect con	nditions (mi	nus)		
						Average	Largest	X.
Box 1	1-3/8"	1-5/16"	7/8"	1-3/16"	9/16"	1.06"	1-3/8"	48
Septe	mber 27—Ve	ry slight p	uffs of wind	. Gun had t		ith other am	munition, Les	noke,
						Average	Largest	Xs
Box 1	2"	1-1/2"	1-3/8"	1-3/8"	1-1/8"	1.47"	2"	Poor
Octobe	r 6-Perfect			y, humid. I 27. Forenco			d with Super	Match
		since	September	21. Foreneo	n test. 250	Average	Largest	X
1	4 4 /4 8	45 1468	4 2 /0 /	C 10.0				
Box 1	1-1/4"	15/16"	1-3/8"	7/8"	1-1/16"	1.10"	1-3/8"	48
Box 2	1"		1-7/16"	11/16"	1-3/8"	1.12"	1-7/16"	48
Box 3	1"		. 15/16"	1-1/8"	15/16"	1.02"	1-1/8"	50
Box 4	1-1/8"	1-3/8"	3/4"	1-1/16"	1-1/4"	1.13"	1-3/8"	48
Box 5	1-7/16" Average of abo		1-1/4" 1/11". Lat	1-5/16" gest, 1-7/16".	1" Xs, 241.	1.20"	1-7/16"	47
Same o	lay—gun not	cleaned-		nition. Arriv		at 4:00 p.	m., left after	firing
			200 1	ounus, at are	o p. m.	Average	Largest	X_s
Box 1	1"	1-3/8"	1-5/16"	1"	1-7/16"	1.22"	1-7/16"	48
Box 2	1"	1"	7/8"	11/16"	1-3/16"	0.95"	1-3/16"	49
Box 3	1-1/8"	15/16"	1-1/16"	1-3/8"	11/16"	1.08"	1-3/8"	49
Box 4	1-3/8"	4.00	7/8"	1-1/8"	1-1/16"	1.08"	1-3/8"	49

Average of above 4 boxes, 1.08". Largest, 1-7/16". Xs, 195.

Average of 9 boxes, 450 rounds fired this day. 1.10".
Largest group fired, 1-7/16".
Total Xs, out of 450 rounds, 436.
Out of above 45 10-shot groups, 20 were 1" or under.
Barrel heated unpleasantly at breech, but this heat disappeared entirely 2" ahead of fore-end.
Gun and ammunition same throughout.
All the targets shot October 6, a. m., have been very damp, due to heavy fog (250 rounds).

which the machine rest particularly emphasizes, is the importance of ignition. I have been interested to note that those lots of ammunition which consistently show great vertical dispersion in the machine rest, in all 52's tried, show the greatest difference in velocity in Tom O'Neill's chronograph. The converse is likewise

Theoretically, a crack shot-either prone or with bench rest-should shoot smaller groups than the machine rest will shoot for this reason: When a good shot sees his shots begin to edge over to one side of the group, he can hold over to the other side. And, if all goes well, the hold-over will just compensate for the tendency of the shots to drift, a very small group resulting. At least this is the theory. In practice, however, it hasn't worked that way with me, even with single groups. The best I have ever done is a 15/16-inch group prone (once), and a 34-inch group

Another fact which we all know but you got an "8" in that last match out of your pet rifle-after you had been telling the boys how it had shot a 10x possible the day before! For small bore match rifles are like children: when you particularly wish them to show off, they behave like the devil!

> That a rest like this one of ours will give you the right answer, is pretty well proved by the incident before mentioned where the machine-rest groups saved a barrel from the scrap pile, that same barrel later bearing out the machine-rest's testimony in the St. Petersburg matches.

THE .22-3000 LOVELL (Continued from page 13)

ground, and erected a series of posts to hold paper target screens at 50-yard intervals. Lacking a transit or surveyor's level, we attempted to align the targets from the firing point with a ten-power Fecker scope, beginning with the most distant one at 250 on the bench rest (also just once). How- yards, and working back to 50 yards. The small firs. When the coyote stood still for an instant I managed to get the crosshairs placed just back of the shoulder point, for a heart shot. At the report of the rifle the animal dropped like a polled ox. The tail flopped twice, and that was all.

We were elated at the result, and climbed the hill to examine the kill. The bullet had left a tiny hole where it had entered, and its entire explosive energy had been expended within the body of the coyote, where it had stopped. With a tape we found the range to be 208 yards.

Never have I seen a quicker, cleaner kill on a coyote with any load. It appears that these light bullets traveling at high velocity expend their entire energy on the animal tissue of game of this size, without passing through the body. The explosive effect of the bullet is devastating.

Now as to ammunition. Since the factories do not make it, we have to roll our own. We use the Wilson shell-trimmer and the loading tools provided by Mr. Lovell, resizing shells after each time fired. The shells are easy and inexpensive to load.

Our conclusions are that the .22-3000 Lovell is the ideal cartridge for the varmint-hunter. It is consistent in performance, accurate, deadly, and does not have an objectionably loud report. The rifle is easy to clean, and shows no signs of metal fouling. And above all, the load is not finicky or temperamental.

It is a true "natural". More power to Hervey Lovell!

THE SPORTSMAN'S CAMERA

(Continued from page 5)

relative density of different negatives, and quickly become accustomed to judging correct exposure.

Another great advantage in making prints by enlargement is the ability to shade any thin or underexposed portion of the picture for part of the total time of exposure, thus producing a better print. This little trick also soon becomes an automatic habit.

The development of prints is such a simple matter that most amateurs know all that is needed. If not, another five minutes spent in reading instructions that come with each package of paper will make the process clear.

Concerning the use or many uses to which the miniature camera may be put, a miniaturist could write a large book. We are only interested in its adaptability to the sportsman.

The miniature camera is compact, rigid, and manufactured with precision. It will carry in the vest or coat pocket, on the belt or in the rucksack. The pocket is the best place, as it is handlest for quick use on game. It should be gotten into action as quickly as a rifle.

Robustly built, not easily put out of line by a fall, with the lens built right into the body, these small cameras are well fitted for hard usage in the woods or on the trail.

No camera really excels the miniature type for quick action on game.

Most of these outfits automatically set the shutter and wind the film at the same time. It is not necessary to take the eye off the game while winding, as the mechanism stops when the new film is in place. The lens is brought into position in one pull. and stops without being watched.

A good man behind a miniature camera can shoot pictures as fast as a hunter can operate the bolt on his rifle and fire aimed shots.

If you are going to get fancy and blow yourself to a long-focus or telephoto lens, then the miniature camera really begins to put on seven-league boots and step out with some of its big brothers. In other words, the long-focus lens will give you a larger image of any subject you choose to photograph. It has the effect of bringing the game nearer to the camera where the camera cannot be moved up to the game. This so often happens in photographing wild animals.

When using long-focus lenses, there is one interesting point about which we must not become confused: If a miniature camera with a six-inch lens makes a picture of a deer at a given distance, the deer's image on the film will be exactly the same size as that produced by any other camera (Graflex, Kodak, or whatnot) equipped also with a six-inch lens. The standard lens usually supplied with a miniature camera is of 2-inch focus (relatively short). This insures greater depth of focus or definition in comparison to the longer-focus lenses. This means that at any given aperture or speed at which we set the lens opening, we get greater sharpness of objects near and far from the camera. Thus errors in judging distance are not of such vital importance-and every hunter knows the difficulty of judging distance under varying conditions.

The curtain-type shutter, built into miniature cameras and placed close in front of the film, is more efficient in many ways than the between-lens types such as the Compur or others found on most Kodaks. This extra efficiency allows one to "stop" fast-moving game passing at right angles before the camera, at slower shutter speeds than with the between-lens shutter. This extra exposure may make the difference between a successful picture and a failure, if the light is poor.

For the sportsman who is interested in photographing speed subjects, such as track meets, skating or skiing carnivals, horse races, rodeos, and speed-boat races, the expensive makes of miniature cameras with fast lenses, curtain shutters, and automatic shutter winding, will be swell outfits. However, the average hunter or fisherman who just wants to take a handy little pocket camera along on his weekend jaunt through the fields, woods, or streams, will get all the quality pictures he wants from the cheapest varieties of miniature outfits. And there are several on the market under \$25.00—all reliable.

I will not attempt to dig into the many refinements of the best miniature cameras, as these are all well exposed. I might say even over-exposed, in the various catalogs. I have tried to remain fundamental in my consideration of this type of camera as adapted to the sportsman's requirements.

The miniature camera has come upon us with a rush—too much of a rush for its own good. In many instances, early-day novices were not properly prepared and educated to the use of this camera and subsequent processing. The equipment itself was unstabilized and not fool-proof.

Today it is another story. Every step from the camera to the enlarger has been well tried out and simplified. Any sportsman who will take an interest in making the photographs of his trips, and then still show enough interest to develop and print his pictures, may go ahead via the miniature camera with full confidence of early success.

There are over half a million others doing it, so why not you? But fo' de Lawd's sake, don't become a camera crank! Master your camera—don't let it master you.

CHOKE

(Continued from page 26)

flight approximately 11/2 inches, and No. 1 pellet approximately 11/4 inches, and apparently to the left. In the 20-inch pattern, No. 3, at 25 yards, the 26-inch pattern, No. 4, at 30 yards, and the 30-inch patterns Nos. 5 and 6, at 35 and 40 yards, respectively, all three BB pellets show a decided trend toward the upper area, although in a staggering path. This is very evident in the graph shown in Figure 7. The apparently erratic course of the pellets is easily understood, as the only way to establish the approximate center of each pattern was by scribing a circle after -not before-firing, to include the bulk of the shot holes; and this may not have been the true center.

In analyzing this graph it will be noted that the total upward movement of No. 1 BB pellet approximated 6 inches, this pellet starting 1¾ inches below the horizontal line at the left of the vertical, and ending 4¼ inches above the horizontal, and still at the left of the vertical line. Pellet No. 2 started ¾-inch below the horizontal and the same distance to the left of the vertical, and traveled a total

distance upward of approximately 1034 inches, ending its recorded flight 10 inches above the horizontal and 4½ inches to the right of the vertical. Pellet No. 3 had its vertical path—after 25 yards' flight—approximately 634 inches from its initial mark on the 15-yard target. From the center of the chart, however, No. 1's travel totals approximately 8 inches, No. 2 runs 11 inches, while No. 3 travels but 9 inches.

What phenomena could cause the similarity in flight of all three BB shot? It doesn't seem possible that any deforming of these pellets passing through the cone of the chamber into the true bore would affect and influence all three pellets in a tangential course, and all in the same general direction. The reducing of the diameter of the shot charge in passing through the chamber cone undoubtedly disturbed the three larger shot to some extent, thus accounting for Nos. 1 and 3 not traveling upward as far as No. 2; though, after all, this is conjecture only. All three pellets were undoubtedly deflected by the choke, directly or indirectly, so as to cross the line of the bore's axis.

Now let us analyze the photographs of shot in flight at 12½ yards, from a cylinder and from a full-choke barrel (Figures 4 and 5)

The diameter of the shot charge from the cylinder bore is much greater than that from the full-choke, and not all of this shot dispersion can be laid to wad interference. The charge was forced through and guided by a bore cylindrical in shape its entire length, and carried on just as released, with the exception of those pellets that were diverted by wad pressure. Yet immediately it was freed from barrel control, the charge commenced to spread or open up.

To show that wads and gas blast do not affect the entire shot charge, a series of shots were made with a gun equipped with a Cutts Compensator, with no shot-control tube attached, the front end of the Compensator-in which the control tubes are usually screwed-acting in the same manner as the muzzle of a cylinder-bored gun barrel. The vents in the compensator permitted the release of all gas and wad pressure before the shot emerged from the front end. The average of several patterns was only 15% better than those made with a cylinder-bored barrel (without Compensator), demonstrating that the wad and gas disturbance on a charge of shot from a cylinder bore could rightfully be credited with deflecting only about 15% of a shot charge from its initial line of flight. Viewing the photograph of the shot charge from a full-choked barrel the same distance from the muzzle (Figure 5), the charge will be seen to be not only strung out more than the charge shown in Figure 4, but of very much less diameter. Bearing in mind the fact that the bore of a full-choke barrel's muzzle is only approximately .035-inch (about 1/32-inch) less in diameter than that of a cylinderbore, it holds to reason that something has caused this great difference in the diameters of the shot charges. What more reasonable deduction is there than that the circumferential pellets have been deflected and are now crossing the line of the bore's axis and continuing on their tangential path toward the target, the column gradually expanding from this point on in both sparkographs? The defense rests.

THE ABC OF PISTOL SHOOTING (Continued from page 12)

or jarring the sights from their correct position, you have performed a good squeeze. Otherwise you jerked the trigger, or have slipped into the habit of taking a poor grip; and more dry practice is in order. Every shooter, whether a beginner or expert, should frequently make this check on his trigger squeeze.

A very common fault, and one that is easy for all shooters to acquire, is to forget to "follow through." In shooting, the eye is kept on the target, and the "follow through" consists in keeping the gun extended in the full aiming position for several seconds after the shot has been fired. Never lower the gun immediately after the hammer falls. If you do you will soon be so anxious to see where the shot hit that you will begin letting the gun sag just about the time you think it is going to fire. Keep it out there until you have mentally called the shot value and position. Then bring the arm down, and see if you are right.

Remember this: Do your dry-snapping practice just as conscientiously as you would were you actually shooting. Never snap a shot that isn't let off with all the care you know how to give it. In dry practice you can learn more about the fundamentals of becoming an expert shot than in any other way.

Habit, relaxation, concentration, trigger squeeze—these are the real essentials of good shooting. Bear them in mind in all your practice, and never fire a shot that is not as carefully let off as if a National Championship depended upon it. You will enjoy every minute of your practice, and learn many things while on the range besides how to shoot.

And now, having discussed this shooting business at some length, and taken dry practice until everything seems to have become almost second nature, let's load up and try a shot.

First we cock the revolver. Then, taking the gun in the left hand, with the left thumb between frame and hammer, we place it carefully in the right hand, with the muzzle pointing down the range. With the trigger finger outside the guard, we carefully place the thumb on the cylinder-latch, and wrap our three lower fingers around the handle. No pressure is exerted by the finger-tips.

Now we take the proper stance, and assume the "Raise Pistol" position. The left hand should be comfortably placed.

We take one fairly deep breath, and then expel it. Now another breath, which is only partly expelled, and then held with the throat.

Now extend the arm, and allow the gun to "sag" from the shoulder until the sights are in perfect alignment at six o'clock on the bullseye.

With the sights on, take up a little on the trigger. The sights swing off, so hold the pressure. Back on again, so take up a little more. Now the sights are off again, and we hold the pressure. Now they're right again, so a little squeeze—with the trigger finger only—

BANG! that shot looked good—let's look at the target. A ten, and a dandy!

WIND-BLOWN BULLETS

(Continued from page 21)

"hours." What allowance should be made for a 5 o'clock wind?

The proper allowance is shown in Figure 3. For a 5 o'clock wind the deflection is only half of what it would ordinarily be.

A head or tail wind blowing parallel with the ground has no appreciable effect upon the bullet's path, even at-long target ranges

That is the theory of cross winds and the flight of a bullet. It has been explained in other ways, and even slightly different answers have been obtained, but this explanation is the only one at all understandable by the non-mathematical gunner, and is quite satisfactory—especially since the results have to be evaluated for what they're worth in practice.

In actuality, the results here obtained will be of value chiefly to the arm-chair theorist. Beside enabling the selection of a rifle that is not especially sensitive to wind, they will give the shooter a general idea of what wind does to his shots, and to what extent it may be blamed for misses.

In actual rifle practice the big game hunter pays little attention to the effect of wind upon the bullet. With modern cartridges the effect of a strong wind at several hundred yards is only a few inches; and when the wind is strong enough to appreciably deflect the bullet, the difficulty of holding the rifle steady is the thing to which most attention is given. Even chuck, gopher, and crow hunters rarely bother about the wind: when it blows enough to be worth making an allowance for, the day is a poor one for accurate shooting.

NEW LOTS OF "PALMA MATCH" AND "PALMA KLEANBORE" ANNOUNCED

FOR 1938

CHAMPIONSHIP AMMUNITION

Declared hotter than ever!

BRIDGEPORT, Conn.-Getting ready for the 1938 smallbore season? Then get hold of some of the new 1938 "Palma Match" and "Palma Kleanbore" ammunition-these new lots are the hottest Remington has ever put out!

Remember what they did in 1937! Among the year's victories for "Palma Match" were a complete sweep of the world's championship matches at Helsinki, Finland, Al Sharp's victory in the New York Metropolitan, Charlie Hamby's 99bull record in 200-yard Decimal Swiss Match at St. Petersburg, Fla., a whole slew of state championships, "Turk" Samsoe's victory at Sea Girt, many outstanding wins at

States Championship. SHOOTERS ENTHUSIASTIC **ABOUT "PALMA KLEANBORE"**

Camp Ritchie and Camp Perry,

Hamley's triumph in the Western

Everybody was talking at Camp Perry about the new Remington smokeless match cartridge "Palma Kleanbore." And no wonder! Anyone who saw H. D. Allyn score 800 x 800 and a new World's Cham-pionship at 50 Meters, or any of the other spectacular wins, knew that shooters' enthusiasm for this new cartridge was not exaggerated. \star \star The target of the month \star \star

Ivan K. Waddell of Medford, Oregon, will be one of the first to receive the new Remington 10X brassards for this swell target, scored at 100 yards with "Palma Match" ammunition. Take a good look at that group, boys! That's the kind of shooting which won him the California Indoor State Championship last fall.



Each month Remington will produce what is in their opinion, "The Target of the Month." Only conditions: 1. It must be fired under N.R.A. rules. 2. Be witnessed by two people. 3. Be fired within one month previous to the time it is mailed to us. 4. Be fired with Remington ammunition or rifle. Send in "hot" targets to Frank Kahrs, Remington Arms Co., Inc., Bridgeport, Conn.

This year, "Palma Match" and "Palma Kleanbore" fans are set to pile the total of their wins even higher!

"PALMA MATCH" AND "PALMA **KLEANBORE" SHOOTERS SCORE WINS AT** SO, CALIF, MATCHES

GLENDALE, Cal.-Eighty-three riflemen gathered here for the So. California Smallbore Championships-and when the smoke cleared away, "Palma Match" and "Palma Kleanbore" shooters had accounted for a majority of the wins.

Palma Match" shooter George Rowell was top man in the Short Range Individual and in the Dewar, second in the 50 Meter, and second in the Aggregate.



George Rowell



Wally Robbins

Jim Crossman was shooting "Palma Kleanbore" and a Model 37-a hard combination to beat. Jim took first in the Wimbledon. Floyd Day won the Palma match with "Palma Match" ammunition. V. M. Corbin and M. M. Heins were first in the Two Man event, shooting "Palma Match." The Burbank R.&R. Club won the Four Man event, with three members shooting "Palma Match."

The Long Range Individual went to another Model 37-"Palma Kleanbore" shooter, W. L. Robbins.

POSSIBLES and **IMPOSSIBLES**

by FRANK KAHRS



My first and most important message to you for 1938 is to tell you we now have our 1938 match ammo, ready. "Palma Match" is as good as evereven better. "Palma Kleanbore" is even hotter than it was at Camp Perry -I checked it myself!

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Don't let anyone tell you that "Palma Match" Lesmok is on the way out! We'll be making it as long as some rifles won't take smokeless.

. . .

If some of you rifle club secretaries have a 16mm. projector, I can send you some fine color movies I took at Bisley, England, and on the way to the World's Championship Matches at Helsinki, Finland. Get your name in early so I can put it on the schedule -we're getting more and more requests all the time.

That Oklahoma University Pistol Team has cleaned up in another match. No less than ten matches went to Oklahoma Team Members in the Pistol Events at the Oklahoma State Matches at Okmulgee. The team includes Mark Cox, C. Whitehead, T. J. Sharpe, and F. C. Hideler. They all shot Remington Ammunition! Jack Louthan of Oklahoma City was also a winner, shooting Remington Ammunition.

The Carnegie Illinois Steel Company is behind the Vandergrift (Pa.) Rifle Club, in building a fine small bore range with covered firing point. Alan Salkeld is the sparkplug, and he intends to put in a modern range and

GOOD NEWS FOR RIFLEMEN!

Prompt shipments now being made on Model 37 "Rangemaster"

BRIDGEPORT, Conn.-Ever since the Model 37 was announced, we've been swamped with many more orders than we could immediately handle. The Model 37 is a custom-built job-and it must meet super-fine standards. It has taken time to step up production. Now, at last, we are able to make prompt delivery.

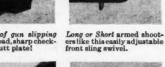
We want to thank the shooters and dealers who have waited so patiently for their Model 37's.

If any of you fellows haven't seen or handled this gun yet, hotfoot it down to your dealer and take a look at it. If your dealer hasn't one, wire us and we'll see that you get one quick!



No danger of gun slipping with this broad, sharp check-ered steel butt plate!

Heat treated working parts. Velvet smooth action. Adjustable trigger pull.







Many a match has already been won with this new Rem-ington micrometer sight.



WOOD POST W FIDAC TITLE WITH "PALMA MATCH"



TONAL FIDAC CHAMPIONS; Post 43, Hollywood Cal., with John R. McQuigg wy, Top row, left to right: Victor Massie, Leo Snell (Team Captain), L. D. Mulford. ta, left to right: Lester A. Pope, Melvin Heins. Archie Goldsborough, fifth member m, is not in the picture.

da real rifle club. With him are pbell and Russ Walbeck. Bill Patin is also in this outfit. From all tions Vandergrift will be heard a before another outdoor season around. Anybody who wants to up this outfit can find it two miles t of Vandergrift Bridge on Route between Vandergrift and Leech-Just follow the signs directing to the range. Byron Campbell of degrift, Pa., is the Secretary. took at

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e few years ago we brought out a p shoulder .22 long rifle cartridge door rifle and pistol shooting and to be used beyond 75 feet. I perly checked the accuracy of this unition and found it practically a par with the regular stuff. For he Pister and I think mostly because ody ever read what we said on the about not shooting beyond 75 feet. y wrote in complaining that shoot-at 100 and 200 yards it keyholed. une it would!

e have a half million of this stuff at the factory and if any of you wa would like to shoot some real mpany nunition that cuts a clean hole up 5 feet in either a rifle or a pistol 11 bore know how much you want and all get together. Some of the clubs the inmition that cuts a clean hole up ge and dgo to town with this stuff.

AL LIUTIC WINS Northern Calif. Title with "Palma Match"

RICHMOND, Cal.-Al Ljutic was plenty hot at the Northern California Championship Matches here -and so was

"Palma Match." Al scored 1190 to take the title, also taking first



place in the iron sights Dewar with 399 x 400.

Coast team scores 985 x 1000 Tops Akron, O., Post by 1 point

ENTIRE TEAM SHOOTS "PALMA MATCH"

HOLLYWOOD, Cal.-When the final scores in the American Legion National FIDAC Championship were counted, "Palma Match" had added another championship to its long string of triumphs, and Post 43 of this city had added another beautiful cup to its Trophy Room.

Eighteen Posts from widely separated parts of the country competed for the championship. The Hollywood team scored 985 x 1000, barely squeezed out the Akron, Ohio, Post's crack team by a single point. Third place went to the Lyons Post of New York, which scored 980 x 1000.

L. A. POPE IS HIGH MAN

L. A. Pope came through with a possible for the winners. Vic Massie scored 198 x 200, Melvin Heins had 196 x 200, as did Archie Goldsborough-the latter shooting a Model 37 Remington "Rangemaster." L. D. Mulford scored 195 x 200.

Like so many other individual and team champions the entire Hollywood team used "Palma Match" ammunition.

MORE HOT TARGETS MADE WITH "PALMA

MATCH"



Here's a target to be proud of—scored at 100 yds. by Butler H. Pratt of West Cumberland, Maine, with "Palma Match." Just a little right windage would have given him a nice 10X possible.



L. M. Yeargin of the Paris (Ill.) Rifle Club made this fine group at 100 yds. with iron sights, shooting "Palma Match." Larry was shooting for a group, and did not touch his sights during the string.

FRED CLEMENS TAKES **LEHIGH VALLEY** CHAMPIONSHIP

Scores 795 x 800 with "PALMA MATCH"-

Poor shooting conditions keep scores low

ALLENTOWN, Pa.-Tough conditions are the real test of a rifleman's skill. Fred Clemens, of Northumberland, Pa., proved this when he won the Lehigh Valley Championship at this city from a field of about 60 riflemen.

The championship match was twice over the Dewar Course. With shooting conditions as they were, Fred's score of 795 x 800

was a remarkable performance. Fred used "Palma Match," of course. Ever notice how consis-tently "Palma Match" comes through when wind and weather are at their worst?

PALMA MATCH, KLEANBORE and RANGEMASTER are registered trade marks of REMINGTON ARMS COMPANY, Inc.

Let's Break Into Print

By W. F. SHADEL

OME rifle and pistol clubs have their matches, turkey shoots, ranges and club houses blazing out from rotogravure feature sections; others' activities are carried with special mention under a columnist's remarks of the sports day; still others are receiving most favorable attention through feature articles which tie up target shooting with game conservation or firearms safety training, or many other closely aligned angles; while the weekly matches of the ordinary club receive their rightful place on the local sports pages along with the other field of competitive games-and in many cases this publicity appears with frequent regularity. That is as it should be, and represents some real live news sense and long sighted publicity values on the part of a wide awake club and up and coming club officers. But, unfortunately, the direct opposite is all too often the case on the part of hundreds of other clubs.

They go blandly along, year in and year out, complacently firing their weekly matches without ever mentioning this fact to the sports public, nor ever dreaming that possible memberships are lurking about through a chance reader who is subconsciously waiting for the necessary incentive to try his marksmanship. As a result, club membership declines, interest among its remaining members gradually wanes, and the officers are soon forced to rely on the few old stand-bys for the necessary financial help to maintain even the semblance of a range program.

Now why all this extreme variation in publicity values right among our own N. R. A. clubs?

Some will answer that the local sports editor is prejudiced in regard to target shooting and will, therefore, give no space to rifle or pistol news. Or there is no one in the club who can prepare the current news as newspaper copy, saying nothing about feature material. So first, before trying to remove these mental hazards or ever so well-founded statements of fact, as the case may be, let us state our position as regards this publicity question. The N. R. A. can and will provide news releases, pictures or news and feature material on events which are brought to the attention of headquarters, in this way endeavoring to link up local activities with the wider scope of the game as it relates to various sections of the country. This should pave the way for a better understanding of the game throughout the country.

But editors know that their own readers

are primarily interested in what John Doakes of their own community is doing. There must be a local tie-in, preferably some outstanding individual or some unusual happening and this material is only available at its source—the local club range. Therefore, if we can offer any suggestions from time to time through these columns which may aid the club's publicity officer in receiving more favorable space in the home papers, we feel that we will thus be engaging one of our strongest agencies for a publicity campaign. Conversely, as this local activity becomes well established the N. R. A. releases on regional or national events will be saved from the waste basket because an interest has already been ascertained among the local readers.

Invite Sports Writers to Shoot

Now to answer those questions or hurdle those mental hazards. It is all too true as mentioned in a recent letter to the N. R. A. News editor from O. B. Keeler of Atlanta, Ga., the man who made Bobby Jones front page news copy, and who, by the way, represents most effectively the case of a newspaper columnist being introduced to this fascinating game and thereafter contributing some of the most valuable publicity through his columns, "that the sports desk of most newspapers is manned by men who know little of the rifle and pistol and revolver game as compared with their knowledge of, and consequent interest in, the socalled major sports-baseball, football, tennis, golf and the like. I have noticed that the scatter-gun fancy was greatly stimulated on the sports pages with the advent of skeet, and the seduction or beguiling of sports writers who never had fired any kind of a gun to come out and try their luck at the traps." Keeler goes on to say "There is little doubt that a similar personal interest would be fostered in the rifle game . . . by acquiring a few sports scribes as honorary members of rifle and pistol clubs; there's nothing like the rampant concern of a neophyte with his new hobby. And as sports sections tend to follow a pattern, once the rifle game gets its start the momentum carries it along."

Have you tried introducing the sport to a staff reporter or the sports editor? Have you invited him to try his hand at puncturing a few in the ten ring? Have you forgotten your first thrill in firing a closely-knit group in the dotted circle, and don't you suppose he will experience the same kick and for the first time sense the fascination which makes you so enthusiastic over your scores? Let's give it a try if you haven't already. In this connection, too, the N. R. A. will gladly supply you with material, statistics and the like to prove to your editor the nation-wide activity and interest in the sport, and the connection your local matches have to the larger scheme of target shooting throughout the country. News of the regional tournaments at which you have a local contender or the National Matches themselves will then be followed with a keen interest by editor and reader alike.

Feature Articles

Mr. Keeler also has some suggestions for those feature stories. "Curious tricks of ballistics; reproduction of unusual groups at the various ranges-they look pretty darned good in a sports section; interviews with visiting riflemen of note; funny stories of the shooting game-which produces its ample share; the playing up of sensational strings, as in a Swiss match, which can be made darned dramatic, or long runs at the longer ranges, are features which might be suggested as adjuncts to the clear and sensible outline by Mr. Weller (November '37 RIFLEMAN). I think the sports editors are not congenitally unsympathetic with the shooting game; they are busy and a lot of them don't know much about it, but they are pretty fair judges of features, when they have a chance to read copy on them. And, as the article pointed out, they'll soon begin sending out after both features and news."

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But the objection most often cited is the one about not having anyone to prepare this material. Granting that you have no one trained for the job at the present, it seems only reasonable that by following a few simple instructions any number of members could prepare suitable copy regarding rifle or pistol news. So here goes. You first, Mr. Keeler: "If indeed I should have any ideas of my own, they would include brevity in copy sent to the sports desks; typewritten copy where possible; promptness-afternoon papers should have the copy by eight or eight-thirty the morning after the event; and emphasis on unusual or spectacular or whimsical features." Or if this seems lacking, then use outstanding achievements of local individuals as members of a winning team, for as the November article pointed out, "General team news is hard to work up-to catch the editor or reader's interest-without showing individual scores, and the 'box score' of a rifle or revolver match takes up too much valuable space for the papers to print it or, in most cases, any part of it."

Be sure that you send in "news" but it must not only be news but it must be "copy" as well, for the competition for space in any -newspaper is so great that your chances for consideration depends on it being good "copy." The editor or assistant is unlikely to take time to do much rewriting. It is much easier, and has become more or less a habit for him to use the scissors. Therefore, your opening paragraph should begin with the climax, or feature, with the pertinent facts crammed into not only the opening paragraph but the opening sentence if possible. The old familiar, Who? What? When? Where? Why? How? must be dealt with immediately. Then secondary facts can come in the second paragraph and tertiary facts saved for the third. As one writer has said: "A newspaper story should be built like a tapeworm so that it can survive the loss of its tail, of its body, section by section and live until at last the head itself is destroyed." Your copy can thus be clipped but the essentials are still there and the story told. The game has again broken into print.

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The "News" section of THE RIFLEMAN necessarily has to be made up quite similarly to the newspaper. The very limited space for club news, tournament reviews, announcements and the like makes discrimination of what constitutes "news" a real problem. And here quite frankly it must be admitted that the appearance and readiness of "copy" oftentimes decides the issue. But the greatest nightmare of the news editor comes from a knowledge that important tournaments or special events are to take place or have taken place and closing date finds no mention of the fact by letter or prepared story. Sometimes the only material on hand is a tabulation of scores and winners, and from that a story is expected to be written. Under what conditions did the winner, Pistol Pete, fire such a remarkable string, or what was the circumstance that goaded tyro, N. U. Winner, into a victory over the seasoned veterans, or the elaborate ceremony of awarding the tin cup for Thurman Randle's leadership of the cross-fire club? You see, such things make a story, and a good story is always news.

The Yellowstone Rifle Club of Billings, Montana, recently presented their club secretary, A. C. "Art" Hoefert, with a Life Membership in the N. R. A. in appreciation of the unselfish and excellent service he has given the shooting game in that section. One of the best riflemen in Montana and a real "hard bitten" addict of the sport, Art has been largely responsible for the excellent showing in membership and financial standing of the Yellowstone Club.

THE FIRST 100 RETURNS

IT is evident that many readers of The American Rifleman have very positive ideas on what they would like the magazine to cover. True, everybody does not like the same articles nor the same features of the magazine but each day's mail brings to National Headquarters an additional supply of answers to the questionnaire which was carried in the December issue of The American Rifleman asking for help to make this a better magazine.

It is still too early to attempt to tabulate the returns from this questionnaire but the first one hundred replies to reach Washington were held to one side as an indicator of what the questionnaire might uncover.

It is interesting to notice that almost every article which was published during the year received a vote from some one of the first hundred as either "one of the best" or "one of the worst articles" of the year. For instance, "Wanderings of a Desert Loafer" by Askins is leading both lists. It is not only the best liked article of the year but it is also the most disliked article of the year. Its prominence on both lists was undoubtedly brought about by its length. Since it was divided into three parts it was only logical to expect it to be remembered by a large majority of those who read it, either as a good article or as a very poor one.

Next in line as the most popular articles are two by Elmer Keith: "Double Barrel Rifles for Timber" and the ".250 O'Neil Magnum." Keith thus jumped into the lead as the most popular author for he is the only person who has two articles included among the fifteen leaders.

Next in line for the honor of being the most popular article of the year are: "Vacation Echoes of 1936" by Roberts; "Take It Along" by Wagar; "Coyotes" by Turner; "An Intimate View of Africa" by Young, and "A Fine Cartridge" by Ness.

The most positive demand shown by this sampling of returns seems to be for a regular section devoted to a comparatively elementary discussion of firearms and their use similar to the "Old Coach's Corner" which was carried in several issues of The Rifleman about a year ago. Eighty-five of the first hundred questionnaires turned in asked for a section of this type.

Next desired is more information and more articles on standard arms with less space devoted to discussions of the more or less specialized arms. Seventy-six of the first hundred would like to see this sort of a change made in the editorial policy of the magazine.

Readers seem to like the "Dope Bag" very much as it is at the present. Forty-

three want more question and answer letters and fewer reports but thirty-nine want more reports and fewer letters. Twelve readers indicate that they want more of both. Readers are also equally divided on the type of game they want to hunt. Thirty-nine want information on big game but forty want more information on small game with eleven asking for more about both.

This group of readers feels that too much space is now being devoted to news of club activities and results of matches. Fifty-eight want less information on club activities and sixty want less information about tournament results. They are fairly evenly divided on the question of the advisability of adding a real antique gun page. Forty-one want such a page while fifty-two definitely say "no."

While the results tabulated are indicative of the wishes of some readers it must be remembered that these are merely the first scattered returns from a questionnaire which is still very active. If you do not agree with the indicated trend of the voting you can help to offset the present standings by turning to the back of the December issue of THE RIFLEMAN and casting your vote for the articles and features which you like. If your ideas do conform with those of this first hundred you can help to have the magazine improved along the lines you would prefer by casting your votes. The best way to be sure of getting a better magazine is to tell the editor what you want. Here is your opportunity.

N. R. A. PRESIDENT HONORED AT TESTIMONIAL DINNER

USTAVUS D. POPE, President of Gustavos D. Association, and the National Rifle Association, and also Michigan State Rifle Association head was the guest of honor at a banquet of over 300 riflemen held in the Michigan Union on the University of Michigan campus, Ann Arbor. The principal speaker of the evening was Major General M. A. Reckord, executive vice-president of the N. R. A., who discussed the pending firearms legislative program of Attorney General Cummings. Colonel Paydon D. Foster, executive vice-president of the Michigan State Association who has been so definitely interested in the progress of rifle marksmanship in the state, was largely responsible for the interesting program and the occasion itself. Others well known in the rifle world attending the dinner were Ned Moor of Detroit, Captain of the 1937 Pershing Team, Charles Vincent of Utica, Harry Garland of Detroit and the state rifle officials. Moving pictures in color of the Pershing Rifle Team at Bisley and another one entitled "With Rifle and Camera in Scandinavia," were shown by Frank Kahrs.

THE D. C. M. WARNS AGAINST TRACER BULLETS

R IFLEMEN throughout the country who are lovers of the game, and who are actively interested in promoting rifle marksmanship as a sport and as a source of potential power for National Defense should appreciate the seriousness of a situation which seems to have developed rapidly within recent years. This situation, wherein the good repute of rifle clubs is threatened, results from an increasingly widespread use of tracer ammunition, frequently under conditions such that resulting fires have damaged ranges and private property to considerable extent.

Tracer ammunition is designed for military use. It has no place in the game of rifle shooting as practiced by civilian marksmen.

The United States Government manufactures tracer ammunition for use in both caliber .30 and caliber .50 weapons. The bullets used in this ammunition contain a tracer mixture which is ignited by the propelling charge, and which burns with an intense heat, giving a brilliant spot of light by which the course of the bullet may be traced. If these bullets strike before the mixture has burned out, there is an excellent chance of starting a fire if the point of strike happens to be located in inflammable material such as dry grass, leaves, twigs or other tinder so frequently found on target ranges. There is no practical preventive to starting grass fires if tracer ammunition is used.

The important fact to be recognized by civilian rifle clubs is that fires ranging from small blazes to serious conflagrations will result unless precautions are taken to eliminate tracer ammunition from the hands of members. The unpopularity within a community of an organization equipped to raze the countryside needs no describing. The expense of reimbursing property owners who may suffer loss through these fires also needs

no discussing. And it should be simple to foresee that having constituted itself a public nuisance and a dangerous fire hazard through use of tracer ammunition, a club might expect to find itself restrained or even completely blocked in its activities on the rifle range.

In order to aid clubs in identifying and removing tracer from their ammunition stocks, the information is furnished that U. S. Government tracer ammunition of caliber .30 may be identified in one of two ways. The older ammunition was loaded in a blackened cartridge case and may be easily recognized. More recently manufactured tracer ammunition is distinguished by a red tipped bullet.

The source of supply of tracer ammunition of Government manufacture is carefully guarded. However, tracer ammunition can be furnished commercially. It is possible also that small amounts of Government ammunition may leak from authorized places. When this ammunition is being expended in target practice it is extremely difficult, if not quite impossible, to account for every round. Therefore, the possession of tracer ammunition is not prima facie indication of wrong-doing on the part of the possessor. It is nevertheless a matter to arouse suspicion as to the intended use of such ammunition or to warrant advice and caution. The hunter has no use for it because of the practical certainty of starting a fire and because, in addition, of the undesirable effect of tracer on game intended for food. The marksman has no use for it because it is not necessary for his purposes, and because it is more destructive of his rifle bore than ball ammunition.

The Association urges all members and clubs to take every possible step to eliminate tracer ammunition firing by civilians. In any case where personal remonstrance is not sufficient to stop the practice, all circumstances should be reported by air mail to National Headquarters at Washington.

Comments

. . Here's one that was good enough to be picked up for the "Washington Merry-Go-Round," a syndicated feature column probably to be found in your local paper. Mr. Lister and others of the N. R. A. staff were lunching in one of the local hotels and talking shooting, of course, when the waiter handed him a card from a woman who could not overlook the spy angle in the war clouds, on which was written this note: "Be careful, the two Japs are listening to every word." Sure enough, at the next table two intent listeners were evidently waiting for some choice bits to fall from our secretary's lips on the deep dark secrets of this rifle game.

. . . And now even the love forlorn columnists are on our necks. The King Features Syndicated "Beatrice Fairfax" suggested in two-column headlines that "Love plus Firearms create a double danger when too near together." They had been drinking beer, had quarreled, and then she grabbed a gun and shot him, "but this won't happen," says Beatrice, "unless somebody is ill-advised enough to introduce a gun into the house." Perhaps that is the solution to the international problem. No guns, no quarrels—but how about the beer?

... "Fun with a Gun is the Constitutional Right of Every American"—so runs the Dec. 6 Life Magazine's caption to their lead picture on hunting. A recent visit with Karl Frederick, prominent New York attorney and former N. R. A. President and leading authority on firearms legislation, discloses the fact that Life's editors are receiving many letters pro and con on their caption. They have turned to our former president for substantiation on a subject which seems to them only sensible and truly American.

... And by the way, have you noticed Rud Rennie's article on our good friend Milton Hicks in Colliers for Dec. 11? Rennie, sports writer for the N. Y. Herald-Tribune, became interested in these target shooters and especially Milt Hicks last spring while in St. Petersburg, Fla., with the New York Yankees in their spring training and was delighted to find material for so interesting a story. How about supplying your local sports writers with some similar material which will give them a scoop for their Sunday feature section?

. . . And here's not merely a hang-over

Notice from the D. C. M.

Effective January 1, 1938, the Director of Civilian Marksmanship is publishing a revised price list of supplies sold through his office to individual members of the National Rifle Association.

Changes in price of articles sold will be found under Class IV—"Ammunition" and Class V—"Ammunition Components". as follows:

Fixed Ammunition	Amount	Old Price	New Price
Cartridges, ball, pistol, cal45 Cartridges, ball, pistol, cal45 Cartridges, ball, cal45, M1911	Per Case of 2,000-Rds	\$38.94 1.95	\$35.48 1.77
(with clips for M1917 revolver),	11 Case of 2,000-Rds	38.94	35.48 1.77
Cartridges, ball, cal30, Mi-Service, Cartridges, ball, cal30, Mi-Service,	" Case of 1,200-Rds " Bandolier 60-Rds	41.56	36.20 1.88
Cartridges, ball. cal22-Long Rifle, Cartridges, ball. cal22-Long Rifle,	Case of 10,000- "	36.26 3.63	32.60 3.26
Components of Ammuniti	on Amount	Old Price	New Price
Bullets, cal30, 172-gr.9° boat tail, g Bullets, pistol, cal45° Cases, cartridge, cal30, unprimed, Cases, cartridge, cal30, primed Primers, cartridge, cal30, Primers, cartridge, cal45,	Ilding metal jacket, Per 1,000	\$5.90 5.37 10.33 12.86 1.71 1.77	\$5.55 5.60 8.68 10.62 1.77 1.85

from Camp Perry, but a sincere tho' belated attempt to give due credit. The Burbank Rifle and Revolver Club of California deserves a most luscious honorable mention for traveling one of the greatest distances to the big time, and yet presentatives of any one club at the matches. That's a long way to travel but they brought their gang along (most of them on their own) to prove they really take their shooting seriously out in them thar' parts.

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. . . Our good friend Ray Trullinger of the New York World Telegram sports department has the keenest analysis of the pizzle shooters when he says in a recent story that "like all gun nuts, however, they collect handguns like Peggy Hopkins Joyce corners diamonds, a fact that drives police licensing bureaus nuts. No cop ever can understand why a civilian wants a revolver to begin with and the idea of owning from two to a dozen arouses grave suspicions among the police. Aside from this curious trait he's perfectly sane and a model citizen. But the cops think he's screwy."

... Page the Attorney General—the wild west is still with us for out in California during the last six years one out of every hundred bought a revolver. Purchases during the year 1936-37 were 12,474, twice that of six years ago, while crimes involving the use of such weapons decreased according to the Bureau of Criminal Identification.

England. British stage villains must get a permit to point a gun at the hero, according to an order from Scotland yard. They were forbidden to brandish pistols or any other weapons in the face of the hero until they obtained a license to possess firearms. The law permits an actor to keep antique firearms as ornaments in his home, but the moment he carries them on the stage he must have a permit. What ho, Romeo, dost thou now stoop to such intrigue?

. . . Why not talk up about our game like Fred Lalone of Sierra Madre, Calif., who remarked to Ed Hainsworth, columnist in the Los Angeles Times, that "the National Rifle Association as an organization whose crusades on behalf of basic American civil rights have been largely responsible for continued liberty to bear arms for self-defense and for sporting purposes." And Hainsworth opines, "this department always has contended that a frearms course in school would end a lot of silly and useless gun accidents."



Photo by Harold Headley

IMPRESSIONS OF A .45 AUTOMATIC

A PIECE of cold steel shaped like the letter "L", weighing about ten pounds, with a hole at one end for bullets to come out and a hole at the other end for bullets to go in. The bullets are put in a little clip and pushed in the bottom of the gun. The idea is to get the clip in the gun and then smack it with the palm of the hand without getting your fingers or hand pinched in the gun. This takes practice—If you can do this five times out of ten, without getting your hand pinched—you are considered GOOD.

On back of the gun's grip is a little hickey that must be squeezed in while you pull the trigger otherwise the gun won't shoot. Oh, yes!!—and there is a safety latch that you generally forget to take off or put on whichever the case may be. This is on the side of the gun where the thumb should rest, but DON'T!!

When shooting—The report and muzzle blast is supposed to make the shooter next to you FLINCH—if this fails, you still have the empty shells that fly out from the gun—and with a little practice and a slight tipping sideways of the piece, you can nearly always hit the man on your right with an empty shell. This

will lower his score,-although it will not help yours, but-just think of the fun you can have especially if he gets hit in the eye or ear with an empty shell!! Now every time the automatic is fired the hammer comes back and rests on that part of the hand between the thumb and trigger finger. When the gun is fired, the hammer, in going forward to strike the bullet, generally takes a little meat from the hand with it, or possibly it digs a little groove in the hand on its way back to rest there. I don't know which it does, but it DOES-All good .45 automatic shooters carry a roll of adhesive tape in their pockets and before shooting they tape the hand (just like a prize fighter)-I got mine taped-but not till after I had lost a hunk of meat from it. This stops the hammer from biting into the FLESH! (Lotta fun, huh???)

I would suggest that all .45 automatic shooters soak their shooting hands in a solution of salt water and alum, this will toughen the skin—I'll soak my HEAD—to toughen my face so those empty shells will have no effect on it. Outside of these facts a .45 automatic is a nice fire-

P. S.—I am looking for a good used .45, I want to practice (without bullets in it).
—Selected.

... Does this record still stand? The March Rifleman for '37 mentioned the renewal subscription of Byron Lacy, of Elmo, Arkansas, who had started his 50th year as a reader of The Rifleman and its evolutionary forebears—The Rifle, Shooting and Fishing, and then Arms and the Man. This record has seemingly not been challenged, and here again Mr. Lacy comes through with another renewal to give him an additional year on youse boys.

... We learn from a California paper that out there an old frontiersman who used to shoot buffalo when he "was knee high" put this experience to good use—only with a modern .45. Held up and robbed twice before, 71-year-old Frank Beutel, liquor store proprietor, was no longer "in a mood to put up with banditry attempts." The young bandit asked Beutel for change and then started for a gun in his pocket. But Beutel also had a gun. Result—one less bandit.

"ENGLISH PISTOLS AND REVOLVERS"

By J. N. GEORGE

Published by Tom Samworth. For sale by N.R.A. Book Department. Price \$4.00 delivered.

Once in a great while a publisher is willing to step aside the usual boundaries of bookdom to present a work solely on its own merits rather than basing his choice of manuscript on "box-office" appeal. Samworth has done this in his latest offering, "English Pistols and Revolvers," with which, as the first of a series, he invades the antique arms field and as well presents to us a new author, and one from whom we shall hear more, if this first volume is indicative of the writer's ability.

The author is J. N. George, well known in England as an outstanding collector, but unknown here or in England as a writer-a man who has that rare ability to interweave a mass of valuable data and a coherent "plot" with the result that his initial effort is at once a valuable reference work and an absorbing, readable story. George concerns himself solely with English handarms, tracing their evolution from the first types of English flintlock (wheellock pistols of English manufacture are virtually unknown) all of the way up past the Great War. Best of all, the book, though British in manner and outlook, presents new findings concerning several eminent Americans-Elisha Collier, who patented his flintlock revolver 18 years before Colt secured his patent (the first Collier revolver, serial number one, is in George's collection); Col. Colt himself, his London factory, and the bitter struggle between Colt and Adams, his principal contender for British Government contracts. All of us are familiar with the famous arms of John Cookson, but how many of us know when, and by whom, this ingenious flintlock magazine repeater was invented. George includes the patent specifications for this type of arm, as granted to one Abraham Hill in 1664.

Perhaps the most valuable feature of the book is the material calculated to aid in dating English arms, evolutionary features that enable the collector to ascribe the date of manufacture within a decade or two, and more closely with arms of 19th century origin.

We believe this "gamble" on the antique arms collectors, and those interested in the fascinating background of our modern arms, will turn out as well as the book merits. It should appeal to the average shooter as well as the hard-bitten collector. For example, it answers, definitely, many questions about obscure features of Webley-revolver variants which continu-

ally pop into the minds of American owners of this brand.

About the only criticism that will stick is that it seems a pity that the publisher did not see fit to include many more of the author's unusual sketches, used throughout the book as chapter headings and tailpieces. Illustrating mainly chronological developments of such fittings as side plates, mask butts, etc., they are a valuable addition to this splendid work.

A final word as to the plates: 26 of them, perfectly in keeping with George's text, and illustrating nearly all of the arms described, they make the volume of immense value as an identification manual of English handguns. In this connection it is well to note that practically all of the early pistols we handle are of English origin, hence the value of the book to American collectors, despite its apparent foreign title.

In short, we like it, and hope the balance of this contemplated series can keep to this high standard. Available, as is the case with all other Samworth Publications, from the N.R.A. Book Department.—John Scofield.

"MANUAL OF LATHE OPERATION"

Published by Atlas Press Co., Kalamazoo, Mich. About 250 pages, 5½x8½. Price \$1.00.

This Atlas Lathe Manual is one of the largest single dollar's worth of value that I happen to know of. Published by the manufacturers of Atlas metal-working lathes particularly for users of these lathes, this Manual is nevertheless a most excellent up-to-the-minute treatise on metal-working lathes in general.

The novice taking up lathe work is confronted with many problems, to find the answers to which in the ordinary way necessitates digging into various different textbooks, handbooks, data sheets, etc. However, the Atlas people have carefully and thoroughly gleaned this information, and placed it between the covers of a single conveniently arranged and concisely written book.

This Manual is clearly the result of extensive study and research by expert engineers and practical machinists, while much thought has quite evidently been given to the matter of typography, printing, and general arrangement. The book is very thoroughly illustrated with photographs, drawings, and diagrams which make every point quite clear; divisional index tabs make the different sections instantly available, while tables of various kinds place specific data and figures at one's finger-tips. The special metal binding allows the book to lie open flat at any page.

This Atlas Manual not only covers, thor-

oughly and completely, the basic essentials of lathe work in general, but deals also with the machining of the modern alloy steels, non-ferrous metals and alloys, and the modern plastics. Each of these materials presents a problem of its own as regards the grinding and sharpening of the cutting tool, speed of work and rate of feed, cutting lubricant, etc., and the Manual gives specific facts and figures in each case. This section alone is worth more than the price of the book.

The Manual is carefully written in simple and easily understood language, and should enable any mechanically-minded beginner to go ahead without serious difficulty. It should certainly be in the hands of every amateur lathe user or prospective user, while I doubt not that professional mechanics will find it constantly useful. In fact I do not think that any user of a metal-working lathe can well afford to be with out it.

-L. J. HATHAWAY.

A LIGHTING EXPERIMENT

REQUENTLY gallery ranges are troubled with a pronounced target glare, even when using tagboard targets. Scores suffer in consequence, and many is the experiment that is tried to see if this fault cannot be eliminated.

Recently when visiting the Postal Pistol and Rifle Club Range in Washington, D. C., it was noticed that the targets were not put up vertically, but at a very slight angle. The bottom of the eight foot target frame was approximately three inches closer to the firing line than the top. Even this slight angle projected the glare over the shooter's head on the 50-foot firing line. Illumination was obtained from lights both above and below the level of the targets, and about four feet to the front.

If your range is one of those troubled with target glare, we suggest that you try a similar arrangement for the results obtained by the Postal Club have been very satisfactory. The angle at which the targets were hung might possibly have to be varied slightly to suit light conditions on different ranges, but this can be determined by experimenting.

At the present time extensive experiments are being carried on by the N. R. A. which we expect will lead to a standardization of lighting for both rifle and pistol gallery ranges. This is a subject which so far has received only minor consideration by the lighting experts, so a great deal of beneficial information is expected to be uncovered by the Association. Whatever the final result is, it will be written up for publication in a later issue of The American Rifleman.

Annual N.R.A. Directors' Meeting May Take Form of Shooters' Convention

Three Day Session Planned to Discuss Sport Promotion

TENTATIVE plans for the Park To Be N. R. A. Directors' meeting to be held at the Mayflower Hotel in Washington, February 3, 4 and 5 include an extended program for this annual conclave, representing the long felt needs of the association in getting its members together to discuss salient points of platform and program. The program, if arrangements can be made, will be built around subjects of prime importance to all association members such as the legislative fight for sane firearms laws and the promotion of the sport through the many avenues open to it-as part of the scholastic extra-curricular program of sports and of nation-wide junior organizations such as the Boy Scouts, the Sons of the American Legion and like groups. Club organization, membership campaigns, publicity possibilities, and tournament plans will be discussed, with additional consideration given to those questions which are deemed important on the part of any member attending the sessions.

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The meetings will take the form of short talks by prominent authorities in

DENTATIVE plans for the annual their respective fields, not necessarily from within the shooting ranks-these talks to merely lay the question before the meeting to encourage a lively open-forum discussion by all those who want to contribute their ideas to the subject. It is believed that in this way a really instructive course can be considered which will be of unusual help to members or nonmembers attending the sessions. The association's business will be considered in the Friday afternoon session as usual, and the annual dinner in the evening will be the high spot of the meeting. At that time a large number of guests will be present to hear the prominent speakers outline the work the association has done in connection with a truly American program of activity.

The association headquarters would appreciate hearing from its members and club officers relative to the response and support such a shooters' convention would receive. Suggestions for subjects to be discussed will also be given consideration in the plans.

warriors, statesmen and rulers. It was during that triumphal progress that Emperor William presented a needle gun to Philo Jacoby as a token of his appreciation of the performance with the gun made by a native of Germany who had become a loyal and patriotic citizen of the United States.

It was at the third Bundesfest of 1901, which was held at Shell Mound Park, Emeryville, Calif., and proved to be the most successful tournament in the history of the National Shooting Bund of North America, where Mr. Strecker made his phenomenal score on the King targetthree 75's in a row off-hand.

Before the outbreak of the World War the Verein had an active membership of better than 1750. This seems miraculous because by this time the community was studded with shooting clubs, but the succeeding years wrought havoc to the Members were getting too old for active competition. Death brought a close of shooting careers to many and at the present time the Verein has a membership of close to 160. Those who are now in the Verein certainly take off their hats to the men who gave California its shooting lore. Besides a wealth of reminiscence these men also have leit the finest indoor shooting alleys in San Francisco and club rooms which are the envy of our shooting brothers. In 1909 the Verein celebrated its Golden Jubilee, with the biggest shoot the West has ever seen even to this day. It took place at Shell Mound Park and lasted eight days. The prizes ran to \$15,000 with the capital King prize worth \$1,500. Lucky was the King on that day.

San Francisco has succeeded in drawing all of its shooting fraternities into a small bore league. Shooting started in November, 1936, with a grand shoot held at the San Francisco Armory with 360 shooters participating.

SCHUETZEN-VEREIN OBSERVES 78TH YEAR

THE San Francisco Schuetzen-Verein is now rounding out its seventy-eighth year of an active career. In the latter part of August, 1859, the three originators, Jacob Knell, H. Millemann and John Reinhart, issued a call to all Germans to join them in organizing a Schuetzen-Verein and met with a most liberal response. Twenty-seven members responded to the first call and met on September 5, 1859, for organization.

As soon as the society had been organized the members arranged to hold a three day shooting tournament and German Volksfest in Russ Garden, Folsom and Second Streets. The members were well known and prominent in the young town (it was not a city in those days) and their first appearance in public, attired in their natty uniforms elicited much favorable comment and many cheers from the popu-

Regular club practice was inaugurated in February, 1861, in Hayes Park located in Hayes Valley in the vicinity of Hayes and Grove Streets, then a sandy desert. The first Eagle and King Shoot

in California was held in this park in September of the same year and was one of the notable events of San Francisco's pioneer days. The eagle was at a distance of 75 yards and on a pole 50 feet high. But Hayes Valley became gradually inhabited and some of the homes were uncomfortably near the shooting range or in a line with the targets and so the Verein transferred its target practice to Alameda County, acquiring its own park and range in that vicinity.

It was due to the wonderful marksmanship of the members of the Verein that California marksmanship attracted the attention of the whole world and praise from experts of all nations. Of the famous team of seven, winning the world championship in the Centennial competition at Philadelphia in 1876, five were members of the San Francisco Verein. The five who shared the honors in that famous victory at Philadelphia were Adolph Strecker, Philo Jacoby, William Ehrenpfort, J. Bauer and W. Koenig. Their honors are still being sung by the old timers. When these famous marksmen added to their triumphs at each contest held in Europe during their travels abroad they attracted the attention of

Obituaru

TEONARD C. NEWTON, 29, of Mand chester, New Hampshire, well known in New England pistol and rifle circles, passed away after more than a month's illness at a local Manchester hospital on Monday, December sixth.

Mr. Newton, an organizer of the Wilson Hill Pistol Club, was considered to be one of the best shots in that part of the country, having won numerous medals and trophies for his keen ability not only locally but throughout the state and in tournaments all over New England.

The sorrow experienced by New England gun lovers over the loss of their young shooting companion is shared by the entire shooting fraternity.

FLORIDA MIDWINTER MATCHES



That promoter au natural, Smitty Brown, is at it again, as evidenced by the clever inducement offered pistol shooters to vacation-shoot amidst the palm trees and enchanting breezes of the Florida clime. (Ah, me —...) He reminds us in the above cartoon that the dreams of the snow-bound pistol shooter of getting outa-doors again may be realized in the Midwinter matches at Tampa, Florida. Equally so the rifleman may shuffle off the mats of the stuffy indoor ranges and inhale some of that exuberant (what a man) sunshine—if that can be inhaled, too.

The publicity man would now enter the scene and portray the laughingly engaging bathing beauty splashing into the surf as a reminder that during off-range hours this too would be your further relaxation. But the rifle and pistol shooter needs no further attraction nor inducement to lure him into the southland than a program such as that scheduled for the St. Petersburg Mid-winter rifle tournament, or the extended five-day schedule at Tampa.

The series of matches beginning March 9 at St. Petersburg and ending March 24 in Havana, Cuba, are expected to draw the largest crowd of target-shooters ever to attend these mid-winters. The St. Pete tourney (March 9 to 13), always a classic for top-notch competition, will show an extended program which will include the famous Yankee-Rebel match and also some restricted class shooting.

The Tampa program has been enlarged to include five days of squadded firing (March 15 to 19) with a greatly enlarged range taking care of the additional registrations expected. It will provide forty firing points at 50 and 25 yards, and an additional twenty-five points for twenty-five yard targets only.

Again this year, the Tampa shoot will offer the handgun artists one of the most

intriguing prizes—a trip to Havana, Cuba, transportation and hotel accommodations prepaid, for a larger than ever group to be selected on the basis of scores. Word from Havana indicates that approximately fifty men are to be included in this selection, which means that any seriously-minded commuter has more than an even chance to be included.

The Cubans attending the Tampa shoot will be offering a real threat to the usually confident tournament veterans for there has been marked improvement in their shooting during the course of a busy competitive season and they will be fresh from the Pan-American Caribbean Olympic matches to be held just prior to the Mid-winters.

THROUGH THE SCOPE

OHIO—The Cincinnati Regional Pistol League closed a most successful first year with a banquet and awarding of prizes at Hotel Alms. Cincinnati, Ohio, on November 17, 1937. The one hundred and forty-eight members of this league were drawn from Hamilton, Butler and Clermont counties of Ohio, and Kenton, Boone and Campbell counties of Kentucky. During the season, nine matches in the .22 caliber and .38 caliber were held. In the .45 caliber four matches were shot, All matches were fired over the National Match Course.

Awards were given to four classes of shooters in each of the .22 caliber and .38 caliber series, and to three classes of shooters in the .45 caliber series. In the high aggregate for all the series, Wm. H. Lux. Indian Hill Rangers, was the winner, with John W. Durbrow, Cincinnati Revolver Club, second, and Joseph F. Lamping, Cincinnati Revolver Club, third. Maj. John H. Knubel, executive officer of the league, donated the cup for the winner of the high individual aggregate, which was won by Lux. In the .22 caliber series the winners of the high flight were Durbrow first, Lux second, and John H. Diekmeyer third. Durbrow had the high individual score with 280. In the .38 caliber

series the winners of the high flight were Lux first, Lamping second, and Durbrow third. Lux had the high individual score with 279. Lux was also winner of the high flight in the 45 caliber series, with Lamping second, and Durbrow third. Lamping made the high individual score of 253.—CLYDE H. FORDYCE.

ARIZONA—The Arizona State Pistol Ass'n matches held at Casa Grande on Nov. 28th brought out a new champion in the person of C. I. Richardson of Casa Grande who led Tuscon's George Parker by a meager two points in the individual honors column. Richardson took the .22 caliber national course event with a 271 to lead T. L. Fraser of Phoenix by one point. He also won the .38 caliber police competitions with a 286. Parker led in the .38 caliber national match with a 276 and fired a 267 over the same course with the .45 automatic to take a nine point lead over Adams, his nearest rival. In the last match, the Langrish Silhouett, firing, Richardson, Parker and Al Seifort of Phoenix scored eleven out of twelve hits.

The Pima Pistol Club shared collective honors with the sharpshooting R. E. Dean's of Phoenix and the Sam Mansfield's of Tucson. The Pimians took an upset win in the four man team match with Mr. Dean taking the men's "B" division and the missus taking the women's police course match.

OHIO—The Tri-State Pistol League, organized recently at a meeting in Cincinnati and representing Pistol and Revolver clubs in the States of Ohio, Indiana and Kentucky, is a result of a rapid growth of hand gun competitions in the middle west during the past two or three years. The object of the organization is, of course, the encouragement of organized pistol matches and tournaments within the three states. The incorporators of the league believe that such an organization can be of material aid to tournament officials in scheduling tournaments so as to avoid date conflicts; in promoting attendance, and aiding in the conduct of such matches as are officially recognized by the Tri-State League.

Three members of the board of directors of the National Rifle Association were among the officers and directors of the new group. These include Ray C. Bracken, Columbus, Ohio, A. H. Chatfield, Jr., Cincinnati, Ohio, and H. C. Almy, Muncie, Indiana.

The League plans to hold six approved

The League plans to hold six approved matches during the 1938 outdoor season divided among the three states included in the membership. Headquarters of the League will be maintained by Secretary and Treas. Butler, c/o The League Pistol & Rifle Club, Chillicothe, Ohio.

FLORIDA—The Florida West Coast Pistol League was organized during the pistol matches on November 14, at the Tampa Police pistol range—the objective of the League to be directed towards the development of pistol shooting on the West Coast of Florida and the surrounding vicinity by providing shoulder-to-shoulder competition under match conditions and at stated intervals, with the various pistol shooting organizations and groups in the different localities. It was decided to hold such matches on the second Sunday of every month and OCALA was selected for the next gathering to be held December 12, 1937. The following officers were elected to guide the League: President—M. M. DesChamps, ACL Police; Ex. Officer—C. A. Brown, Floridian Pistol Club, Tampa; Sec.-Treas.—Kenneth Knittleson, Floridian Pistol Club, Tampa;

COMING EVENTS

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FLORIDA

*March 9 to 13: National Mid-Winter Small Bore Rifle Tournament sponsored by the Florida State Rifle and Revolver Association at St. Petersburg. For programs write T. F. Bridgland, 225 4th Street, North. St. Petersburg, Florida.

* March 15 to 19: National Mid-Winter Pistol Tournament to be held at Tampa. For programs write C. A. Brown, Box 253, Tampa, Florida.

March 22-23-24: Pan-American Pistol Matches to be held in Havana, Cuba. For programs write Francisco Enriquez, Edificio Barcardi, Havana, Cuba.

*April 1-2-3: University of Chicago Indoor Dewar Match at Chicago. Sponsored by the University of Chicago and Illinois State Rifle Association. For programs write Russell Wiles, Jr., 5830 Stony Island Avenue, Chicago, Illinois.

*June 10-11-12: Camp Grant Memorial Rifle and Pistol Tournament at Camp Grant, Rockford, Illinois. Sponsored by the Illinois State Rifle Association. For programs write Major Lester F. Stewart, 710 S. Main Street, Normal, Ill.

January 23: Second Annual Tri-State Rifle and Pistol Matches at Richmond, Indiana. Sponsored by the Old Trails Rifle and Pistol Club. For programs write J. Y. Little, 340 S. W. 3rd Street, Richmond, Indiana.

MASSACHUSETTS

January 22-23: Third Annual Team and Individual Pistol Matches

February 27: Fifth Annual Team and Individual

April 2: Third Annual Junior Rifle Matches, team and individual. Programs will be available two weeks prior to each match and may be obtained from Mr. David C. McNeill, 33 Beckford Street, Beverly, Massachusetts.

NEW JERSEY

*January 21-22-23: Middle Atlantic Championships at Newark. Sponsored by the Essex Troop Rifle Team. For programs write Charles E. Rousek, Jr., 507 Main Street, East Orange, New Jersey.

January 30: Annual New Brunswick Small Bore Matches sponsored by the New Brunswick Rifle and Pistol Club. For programs write W. F. Bley, 101 Haverford St., New Brunswick, New Jersey.

NEW YORK

January 9: H. M. Pope Offhand Rifle Match to be held at 24 Murray Street, New York City. Sponsored by the H. M. Poper Offhand Rifle Club. For programs write J. C. Lippencott, Jr., 722 Pennsylvania Avenue, Elizabeth, New Jersey.

January 9: 50-Yard Small Bore Rifle Match at Hudson County, New Jersey. Sponsored by the Swiss Rifle Association. Prizes to 7th place—\$140.00 in cash prizes. For programs write E. M. Armelin, 460

W. 34th Street, New York City.

*January 22-23: Niagara Frontier Indoor Smallbore Rifle Tournament to be held on the 174th Infantry Range. All shooting at 100 yards. Entries close Friday, January 21st. Sponsored by Buffalo Revolver & Rifle Club. For programs write C. M. Bickers, 187 Leroy Avenue, Buffalo, New York.

April 16-17: Niagara Frontier Pistol & Revolver Championships at Buffalo. Sponsored by the Buffalo Revolver and Rifle Club. For programs write Wallace A. Beattie, 79 Stevens Avenue Building, Buffalo, New York.

January 24: Annual Plainview Gallery Matches at Plainview, Texas. Sponsored by the Plainview Rifle Club. For programs write Henry A. Roberts, Box 948, Plainview, Texas.

VIRGINIA

January 28-29: Appalachian Gallery Match at Christenburg, Virginia. Sponsored by the Montgomery Rifle Club. For programs write D. M. Barnett, Elliston, Virginia.

January 15-16: Indoor Miniature Dewar Match at Westby. Sponsored by Viroqua-Westby Rifle Club. For programs write Henry A. Nerison, Westby, Wis-

GUNS STOLEN

Stolen from Randall A. Diefendorf of 5228 Forbes Street, Pittsburgh, Pa., a Winchester, Model 52 caliber .22, No. 3122. The gun was taken from the University of Pittsburgh rifle range during the night of Wednesday, November 17th.

Stolen from the Coffeyville Rifle & Pistol Club, Model 57 Winchester, No. 19862 Lyman 42 rea sight, barrel drilled for scope blocks. A new bolt handle was on the gun and the bluing was well worn. Notify G. L. Howard, Sec. and Treas., 4221 W. 6th, Coffeyville, Kansas.

Stolen from F. J. Wiess, P. O. Box 242, Sheboygan, Wisconsin, 1 Remington .30 automatic Model 8, No. 19283; 1 Winchester Model 71, .348, No. 3362, De These guns were stolen from the owner's automobile at Stevens Point, Wisconsin, on Nov. 29th. A reward of \$25.00 is offered for their return.

Mr. Wm. B. Kirkpatrick reports the theft of the following pistols and revolvers stolen from his home at 1600 Jewell Ave., Topeka, Kansas, the night of Nov. 25th. 1 Colt Woodsman, 22 automatic pistol, Nov. 25th. 1 Colt Woodsman, 22 automatic pistol, 6½ inch bbl., No. 95,344, with sheep lined case and extra clip. 1 Colt Camp Perry, 22 single shot target pistol, 8 inch bbl., No. 1,765, with sheep lined case and Packmayr grip adapter. 1 Smith & Wesson 38/44 Outdoorsman, 6½ inch bbl., No. 42,652, with sheep lined case, Pachmayr grip adapter, and Heiser hand carved holster. 1 Smith & Wesson Military and Palica 28/4 target xwallers sheep lined case. Police .38 target revolver, sheep lined case and Heiser thong wrapped holster. 1 Smith & Wesson .32 cal. safety hammerless revolver, 3 inch bbl., nickel plated, No. 48,797. 1 Iver Johnson .32 safety hammerless automatic revolver, 3 inch bbl., blued.

Mr. R. O. Prideaux reports that a Marlin Model 39 rifle .22 caliber, No. HS 18977 was stolen from his ranch, one mile north of Markley, Texas, on Nov. 25th between 10:30 A.M. and 4:15 P.M. The gun at the time stolen had a Lyman tang sight and target disc, no rear sight on the barrel, and the ivory bead on the front sight was off. The inside of the rifle was in perfect condition, outside good, some trace of rust on the receiver and barrel. Notify the owner at Antelope, Texas, Route 1.

Two Colt Automatic pistols, serial numbers No. 266090 and No. 383140, both in good condition. Notify Anthony C. Biagi, Skokie Boulevard and County Line Road, Highland Park, Illinois.

Colt .38 Officers Model, No. 529567, 71/2" bbl. front and rear adjustable partridge target sights, all blued, in perfect condition with special Walter Roper grips. Colt .48 Automatic, Government M-1911, No. 224005 special Hopkins-Beyer Grips with thumb rest. Blue practically worn off. H. & R. .22 cal. Sportsman, 6" bbl. No. D-20908 blue in perfect condition. Initial "B" cut into base of grip. Each of these guns was in its Berlin wool-lined cases, and stolen from Ford Sedan in Houston, Texas. Notify C. Balkin, c/o Oxford Hotel, Enid, Oklahoma.

Stolen in Washington, Pa., Nov. 11, one single action .44 special Colt revolver, 51/2" bbl. #341,880. Imitation stag grips, V rear sight milled to Patridge design. Notify John M. Alexander, Braden Castle, Manatee, Florida.

Buffalo Matches January 22 and 23

The third annual Niagara Small Bore Championships being held in Buffalo, N. Y., on January 22nd and 23rd, bid fair as an outstanding highlight of the winter season in the northeast.

Added to the preliminary events will be a two and five man team match, a 50 shot individual championship, and a championship for ladies, all matches to be fired at 100 yards. This year the matches are registered and a competitor may shoot in both iron and scope sight divisions of each match excluding the two man team competition. Chester M. Bickers is again chairman of the committee in charge and is making every effort to have the matches meet with the approval of all competitors.

Iowa Club Offers Instruction Course

IOWA-The Des Moines Rifle & Revolver IOWA—The Des Moines Kille & Kevolver Club will conduct a six weeks course of instruction in rifle (and possibly pistol) marksmanship beginning in January 1938. The course will emphasize safety precautions which are essential in the handling of firearms, and in addition will cover all fundations of the property of the development of the development. mental principles necessary to the develop-ment of a skilled target shot. The instruction will be available to any one interested in shooting as a sport. Any one desiring information should communicate with Mr. Howard O. Smith, Secretary, 6718 Forest, Telephone 5-1663, Des Moines, Iowa.

Questionnaire on New Pistol Target

Many requests for the 50 ft. slow fire pistol target, a test target differing from the present Standard American target in that the bulls-eye includes the seven ring as well as the eight, nine and ten rings, have been coming into N.R.A. offices since they were announced in the December RIFLEMAN. So far these requests have all been answered by the questionnaire accompanying these targets have been slow in return. It is desired that these replies be in the office by February 1st, in order that they may be given consideration at the time of the Directors' Meeting, Feb-

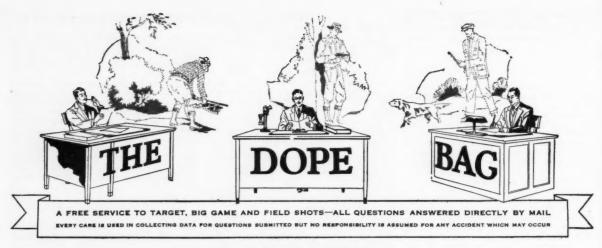
CHALLENGES

The East Liverpool Rifle Club five man team would like postal gallery matches, metallic sights, 40 shots prone at 75 feet. Four shots shall be fired on each bull using five bull targets; these targets to be exchanged and all five scores to count. Send all communications to John H. Gallemore, 2511 St. Clair Ave., East Liverpool, Ohio.

The Bermuda Miniature Rifle Association wishes to challenge teams in the United States to .22 caliber outdoor twenty-five and fifty yard matches. Interested clubs can contact Hon. Lewis R. Lindley, Secretary-Treasurer, P. O. Box 285, Hamilton, Bermuda, for the purpose of working out the match details.

The Harvard University Rifle Club freshman team challenges any other freshman rifle team to a threeposition postal match at 50 feet during the months of February and March, 1938. Communicate with the Secretary, Harvard Rifle Club, Adams House D-44, Cambridge, Mass.

The Capital City Rifle Club, of Topeka, Kansa would like postal gallery rifle matches, 10 shots offhand and 10 shots sitting, the latter optional to be fired on official N.R.A. targets at 50 feet with any Scores to be exchanged but fired match targets to be preserved 15 days in case of protest. Address communications to Lawrence E. Brooks Sr., Secretary, 1419 Van Buren St., Topeka, Kansas.



Conducted by F. C. Ness

Consider the .25 Stevens

N INEXPENSIVE factory ammunition, what do we have available for killing small-game, positively, but without undue destruction, up to 100 yards? Only lead bullets can be considered for this purpose and, of course, only in store-counter loads.

The top loads, for power, are the centerfire .25-20 Repeater and the .25-20 S.-S. both having 86-grain flat-nose, lead bullets driven at between 1300 and 1380 f.-s. and developing from 325 to 365 ft.-lbs. at the muzzle. These loads kill small game well and have a trajectory over 100 yards of around 2 inches, which would be practical for the purpose. However, they are not particularly accurate, and their cost, \$6.45 to \$7.30 per 100, would eliminate them.

That leaves the .22 W. C. F. as the only center-fire cartridge which can be considered, its cost being less than \$1.50 per 100. The .32 Long, rim-fire costs \$1.36 per 100 and would qualify as to killing power, but its trajectory over 100 yards is more than 5 inches and its poor accuracy disqualifies it beyond 25 yards. Inadequate killing power disqualifies everything under those high-velocity .22 Long Rifle loads which have sharp-shoulder or hollow-point bullets.

We then have remaining for consideration, with cost per 100, the following: the high-velocity, .22 Long Rifle at \$0.68; the high-velocity, .22 W.R.F. at \$1.10; the .22 W.C.F. at \$1.42, and the .25 Stevens at \$1.62. The .22 W.C.F. can also be eliminated, without hesitation, because its 45grain bullet develops 170 ft.-lbs. energy, thus only equaling the high-velocity .22 Long Rifle in that respect but without as good accuracy, and we refuse to pay the \$0.75 differential merely for the flat nose, and for the insignificantly-slightly-larger diameter of its bullet, and for its veryslightly-louder report.

The high-velocity .22 W.R.F. and the regular .25 Stevens both have flat-nose, lead bullets which develop from 200 to 225 ft.-lbs. energy at the muzzle. For our \$0.50 differential here, we get, in the .25 Stevens, 20 to 25 grains more lead and an appreciably larger bullet, which adds .03 inch of displaced tissue about the wound which would be caused by the smaller .22 W.R.F. bullet. The accuracy of the .25 Stevens is slightly better, but its trajectory over 100 yards is twice as high as that of the high-velocity .22 W.R.F. load, consid-

There is another advantage offered by the .25 Stevens, on account of its greater size and report, but only to those who have become disgusted with the piffling size and report of the .22 Long Rifle. Such disgruntled shooters do not recognize a sufficient difference in the .22 W.R.F. cartridge to satisfy their urgent desires for more authority in their loads and greater ostentation in their shooting.

Currently-made rifles adapted to all three of these rim-fire cartridges are the 053 Stevens (083-Springfield) and the 4171/2 Stevens, both single shots. All three loads are adequately accurate for small-game shooting up to a maximum of 100 yards. However, trajectory complications, or bullet-drop beyond the pointblank range, limits the .25 Stevens to 80 yards, the high-velocity .22 Long Rifle to to 100 yards. For these limited ranges, respectively, each rifle can be so zeroed as to keep the impact within an elevation of an inch below aim to an inch above aim at any distance between the muzzle and the point-blank range indicated.

The 053 Stevens is a five-pound boltaction rifle with receiver aperture-sight and hooded front-sight. This single-shot is in the low-price class, as it costs less than \$6.00. Using the Study rest and shooting from prone with the factory metallic sights our 10-shot groups averaged about an inch, center to center, at 50 yards. Regular .25 Stevens Kleanbore for our forty shots ran, 0.95, 0.98, 1.08 and 1.23 inches, in successive 10-shot groups. The biggest group had 9 shots in exactly one inch. That equals the .22caliber accuracy of this model, under similar conditions.

Our 417 Stevens with .25 Stevens heavy barrel would shoot 7/8-inch groups at 65 yards from machine rest. with Remington Kleanbore ammunition from machine rest at 100 yards outdoors, and had a 50-shot average well under 13/4 inches. The 10-shot groups, fired consecutively, were: 1.44, 1.48, 2.16, 1.76 and 1.56 inches, center to center. Again that equals the .22 Long Rifle. About thirty shots fired from the Study rest, prone, at 100 yards, averaged just over 2 inches.

We used a scope sight 11/2 inches above the bore, for our trajectory test, which was extended to 150 vards. At that range our 5-shot group was 2.60 inches, center to center, and the impact was 10.35 inches lower than the 100-yard impact. At 50 85 yards and the high-velocity .22 W.R.F. yards the impact was 3.40 inches higher

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than the 100-yard impact. The elevation given the scope, or the required angle of barrel for putting the impact on the point of aim at 100 yards, was 12.5 minutes.

Now, if we had a high-velocity cartridge for the .25 Stevens rim fire it would surpass the high-velocity .22 W.R.F. in every way. It should be made 1/16 inch longer in the case so that it could not be used in unsuitable .25 Stevens rifles (old and worn or weak) already on the market. It should have a strong brass case which would not burst at the head in proper rifles. It should have a 70-grain semi-pointed bullet at a muzzle velocity of about 1600 f.-s. It should have the accuracy of the .22 Long Rifle, or better, and should sell at \$1.50 per hundred. I am told by sales and production people and by ballistics engineers that all these things are possible.

Such a cartridge should be nearly ideal for small-game shooting over short .22-Hornet ranges and for practical practice at military targets, or deer targets, slow fire and rapid fire, at 200 yards. It would require about 8 minutes of elevation for zero at 100 yards, and its trajectory would be less than 134 inches above aim at 50 yards. and it would land not more than 5 inches lower at 150 yards than at 100 yards. It would have such practical trajectory for a point-blank range, with a scope sight, up to 125 yards. While with pointed bullets it would have less wind deflection than the .22 Hornet, the latter, of course, would outclass it in calm weather, but that is to be expected from a center-fire cartridge costing twice as much. It is interesting to contemplate such a factory cartridge, but as to if and when we may get it no one can say, as yet.

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This proposed high-velocity .25 Stevens rim-fire cartridge is wanted by many, or I have been misled by letters which have crossed my desk during the past several years. Such a cartridge would require a new rifle to serve the hunters who would use it. Those sporting rifles which come nearest to being a suitable .25 Stevens Sporter of all present models are the Savage M-23 Sporter and the Stevens M-056 Buckhorn, and probably a twenty-dollar cross of the two would provide an adequate 5-shot, clip-loading, bolt-action for this purpose. We want to know what the readers think about this. That is, a .25 Stevens H. V. cartridge and the sporting rifle for same. Let us have your ideas.

The two .25 Stevens rifles which we tried, and have mentioned here, were shipped in August, and they were tried only on squirrel. We found any kind of a body shot stopped the animal cold, which is not always true of the best .22 Long Rifle load. The regular .25-rim-fire Kleanbore ammunition which we used was purchased locally. We know the .25 Stevens is much more effective on such game as

chuck season, or soon thereafter, we hope a high-velocity load will be available. Within its range limits this will, we expect, prove to be as effective on chucks as the .22 Hornet, without the Hornet's objectionable lacerating effect on softer and smaller animals. Because of the 50% price differential, twice as much shooting could be enjoyed at the same cost.

.44 SPECIAL EXPERIENCES

THREE-DOZEN letters from a revolver fan, a series which began just before Christmas back in 1935, contain some interesting dope. They are too lengthily involved to print, but I have extracted a dozen long sheets of notes. These letters are from J. W. Landon, Pittsburgh, Pa., who likes heavy loads which I do not advocate. Nevertheless, for what they may be worth, I shall attempt to interpret and present his ideas, but without recommendation.

Pertinent Particulars

Landon has a right-hand handicap which makes him left-handed with shoulder arms and two-handed with revolvers, and he thinks the big King Formfit stocks form an ideal standard grip on his S. & W. Military Model revolver. It is a .44 S. & W. Special and has a 61/2-inch barrel. He likes the Whitex front sight outdoors, or with good light behind it indoors, but objects to the need of removing its side pieces in poor or unfavorable light.

Excepting rabbits and birds, he uses the 44 Special on all game, because his handloads cost him about 1/2-cent each for components. He is probably a good stalker and hunter, because he is a very ordinary marksman. Getting most of his shots in 4 inches at 50 yards satisfies his game-shooting requirements. He uses a knee rest and gets 6 shots in 3/4 to 11/4 inches and 20 to 50 shots in about 21/4 inches at fifty feet and from 30 to 35 out of 50 shots in 6 inches at 50 yards.

For all that, Landon has an ambition to emulate, with his .44 Special and handloads, Ed McGivern's long-range feat of 17 hits out of 20 shots on a man-size target at 500 yards with the .357 Magnum. Landon thinks his .44 Special has the .357 Magnum outclassed in killing power, and the .38 Special equalled in accuracy. At the 500-yards' zero adjustment, with the handgun, accurate aim could be taken at the basement of an ordinary house set 250 yards from the muzzle, and the mid-range trajectory height of the bullets would carry them over the top of its chimney. Factory loads and the machine rest gave a 34-inch group at 20 yards with his .44 woodchuck and jack-rabbit, but by next Special, which is 31/2 minutes of angle. it, or 1-20, the weight is 210 grains. This

But his own average is about 12 minutes of angle, equal to five feet for all shots projected to 500 yards.

Landon uses a 42-ounce gun with a 4-lb. trigger pull and shoots as fast as his eye can accurately catch the sights, or a shot in about every two or three seconds. Also he usually shoots 20, 30 or 50 shots all in one group in his testing. In this manner he burned up 3500 rounds in his .44 Special over six months and he used 5000 or more commercial primers in a year. While he is an experienced tester in practical shooting, he is an amateur experimenter and not a ballistics expert. Hence, his loads and deductions are not to be taken as safe for arbitrary adoption, but rather as suggested possibilities, worthy of consideration.

Bullets and Ballistics

Landon likes the general idea of Elmer Keith's extreme loads, but he thinks the Keith-Ideal bullets have too much borebearing and he greatly prefers the latest Ideal design No. 429336. His only objection to the No. 429336 bullet is the lack of an adequate crimping groove. With this 250-grain bullet, the Sharpe 260-grain and the 260-grain, B. & M. (No. 429261) bullet he says 10 grains Unique or 18 grains No. 2400 will develop 1100 to 1150 f.-s. at 20,000 lbs. pressure in the .44 Special. He thinks the 260-grain, B. & M., No. 429261 bullet has too much bearing surface and the Sharpe 260-grain has too much point, but it is otherwise as good as any heavy bullet available for maximum shock power. As of the Ideal-Keith bullets, he thinks the 240-grain B. & M. bullet, No. 429240, has too much bearing surface. He dislikes cavities in the base or point.

Although not quite his ideal, he prefers the 230-grain Bond bullet, No. D-429, over all available bullets for the .44 Special. For him it has given good accuracy and shock power, and it has surpassed everything tried in the matter of penetration. One report shows 6 inches in hard oak. At that time he reported shooting 300 shots per week with these loads.

He used his heavy loads behind this bullet and got 25 shots in 21/4 inches at 50 feet. He also used it with 10 grains Bullseye to expand his cut-off .405 Winchester cases. He used 5 grains Bullseye for best accuracy and had 30 out of 50 bullets touching the same spot (one hole) at 50 feet. His 6-shot groups were 3/4 to 11/4 inches and equalled the best .38 Special tried. He finally adopted this D-429 bullet and bought a Bond mold

For regular use the best all-around bullet Landon has found is the B. & M. No. 429205. In B. & M. No. 3 metal this bullet weighs 205 grains, but as Landon casts

bullet equals the accuracy of the others up to 50 yards and surpasses them at greater distances, for him. He reported one load at only 800 f.-s. and 9,000-lbs. pressure putting all shots in 12 inches at 300 yards, which is exceptional to say the least. One load with only 4 grains Bullseye at 750 f.-s. put 5 shots in 5/8 inch at 50 feet. This bullet showed surprising accuracy at 200 yards, he said. His regular test load with this bullet was 20 grains of No. 2400 at 1300 f.-s. velocity. He used up to 21.5 grains of this powder at 25,000 lbs. pressure and claimed a paper energy figure of 896 to 900-ft-lbs. at a velocity of 1391 to 1400 f.-s.

Landon does not recommend going over 22,500 lbs. pressure even in the best heattreated S. & W. Military Model revolvers (serial number above No. 16,599). He thinks the Bond-Ness D-429 bullet with his heavy load will give 1400 f.-s. at lower pressures than that of the 21.5 grain No. 2400 load behind the B. & M. No. 429205 bullet. He used only a few of the Bond, 215-grain, B-429, bullets (No. 429750) but had fair results with those tried. Using 5 grains Bullseye they gave about his usual spread, or 23% inches at 50 feet. He sizes his bullets to groove diameter.

The 210-grain B. & M. bullet No. 429205, as Landon used it, has a seating depth of .269 inches. I have loaded it, crimped in the regular groove, and the seating depth was .284 inch. Earl Naramore gave it a depth figure of .296 inch. This indicates the inescapable variations possible, with care, in loading, which makes me advise against the arbitrary adoption of any suggested maximum load. Landon's idea of an ideal .44 Special bullet is the Bond-Ness D-429 with a shortened seating depth of .269 inch so he can use the extreme, high-velocity, powder loads which he uses behind the shorter and lighter B. & M. 210-grain bullet. His standard cartridge length with all bullets mentioned is 1.575 inches, measured from the top of rim instead of the base, because this is the cylinder-length of his S. & W. revolver.

Powder Preferences

For target accuracy and regular shooting Landon prefers 4 to 5 grains Bullseye behind all bullets. His pet load is 4.5 grains and the B. & M. 210-grain bullet. He has not tried No. 5, but No. 6 powder did not satisfy him as to uniformity. Next to Bullseye his best load for accuracy and regular use with all .44 Special bullets is 10 grains No. 80 powder.

For high-velocity loads, above 15,000lbs. pressure, he prefers Unique powder, but finds the recoil and blast heavier than with a 2-grain heavier charge of Herco shotgun powder, which latter gives him the same accuracy and ballistics as Unique, he thinks. However, at low velocity Herco had no advantage over No. 80 or Bullseye. Since Herco is not made for handguns he does not use it in charges producing above the equivalent of the 15,000-lbs.-pressure level of Unique. Oval did not give him satisfactory results up to this 15,000-lbs. level.

He does not regularly use extreme loads; only occasionally or for testing. Over one, half-year period he used only 8 ounces of special propellants while he was consuming a can each of Unique and No. 6 and two canisters of Bullseye in this one .44-caliber revolver. He prefers Western solid-head cases for heavy loads.

Leading and Lubricants

Much as he preferred the .44 Special to the .38 Special, .357 Magnum and .45 Colt, Landon considered giving it up because of excessive leading over the first two inches of the bore at the breech. Factory lapping made matters worse if anything and a new barrel was finally fitted, but without curing the trouble. All powders, bullets, diameters and alloys gave this leading problem, after 50 shots, until he finally solved it with special lubrication. At first he used colloidal-graphite-in-water as a mild abrasive to polish the bore, by painting the bullet, nose and shoulder, with Aquadag and then dipping it in lubricant after it had dried. This could be done, and was done, with loaded cartridges.

After 566 shots he noticed the polishing effect of Aquadag on his bore. After 1500 rounds had been fired the polishing action was complete and thorough, and after shooting up to 2000 bullets, so treated, wear on the breech-end of the bore was evident, and he discontinued using Aquadag on the bullets. His second barrel was beveled at the breech, and he could scrape off burned lubricant containing Aquadag after a dozen shots. He fired 200 rounds to get these hard rings, left by the Aquadag lubricant, in order to test its abrasive qualities, and found it quickly polished and even scratched his metal lighter.

In the summer of 1936, Landon began using Oildag and Gunslick in special lubricants for the bases of his bullets and found his troubles with leading were ended. In an early experiment, he mixed Ideal lubricant, Gunslick, vaseline and Anti-Rust oil which did the job well, a thin base wad on the bullet stopping all leading. His basewad loads were stored three months, and also four months, and then fired with no evidence of deterioration resulting.

Wanting an improvement in substance, he used 8 parts wax and 2 parts Oildag. His waxes were Carnuba, Chinese Insect and Ceresine, the latter being found best and finally adopted. He found he could use, in stored handloads, Ceresine alone on the bullet base, or he could use Oildag or Gunslick alone on the bullet shoulder just before firing, and stop all leading in

the .44 Special and .38-40. Ceresine cost him 45 cents per pound and had a melting point of 145° Fahrenheit, which he considered ideal, as he wanted the entire base wad to melt in a 6-inch revolver barrel.

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He found any excess lubricant would squirt out through the cylinder gap, and that the wad thickness had to be gauged by the pressure or character of the load for maximum efficiency. He used thicker wads with the heavier loads, and found all his loads worked well with these base wads. The lightest target loads melted the wads satisfactorily and his heaviest loads developed no bore leading.

By the middle of 1937 he had fired 1984 loads lubricated with colloidal graphite and then determined, "it does not wear the barrel quickly." This .44 Special barrel then had a better polish, but the lands were as sharp as new, the accuracy was the same, and the bore-slug then miked the same as it had when it was slugged before the test. Eventually, he found his bore had suddenly quit leading entirely, even without the special lubricant.

This anti-leading grease he suggests particularly for pitted barrels or for any bore prone to lead badly. The straight Ceresine wax will do the job well, either as a wad on the base of the bullet, or as a shoulder-smear on the loaded bullet. For those who may wish to add Oildag he suggests adding 20% in small amounts to the melted Ceresine wax. A dash of sodium oleate will help to mix dehydrated Aquadag if it is wished to avoid the oil. It can be mixed until cool, and later worked while cold just before using.

Our Own Opinion

While we have used shotgun powder, as an emergency measure, in handguns and have had good results with Oval in the .45, such propellants are designed for smooth bores and they should be approached with caution and carefully used, by those qualified, with due consideration for every detail which might affect pressures, as the maximum safe limit may be quite suddenly exceeded without any preliminary indication.

The same warning applies to all heavy loads, above the normal 15,000-lb. level. The heavier the load the more danger of an unexpected boost to a gun-wrecking pressure from some unsuspected or seemingly insignificant source. In the very first place, the revolver should have a heavy frame, a well-locked chamber-alignment and a modern heat-treated cylinder before the shooting of heavy loads can be considered as a legitimate possibility.

Our experience with No. 6 pistol powder does not coincide with Landon's, and we do not agree with his relative rating of No. 80 as a consequence. Up to the standard maximum level of 8,000 pounds to 15,000 pounds, according to the revolver

limitation, we would prefer Bullseye, No. .38 Special, and the recoil and blast are 6 and No. 5 to No. 80 powder. From lighter; also factory ammunition, in this 15,000 pounds to 18,000 pounds we would select Unique, and up to 20,000 pounds, less per box than the .38 Special cartridges cost. Reloaders find it more eco-

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We know that grease wads on the bases of revolver bullets will stop leading of the bore. The .44-Special and the .357-Magnum calibers seem to be the worst offenders. Phil Sharpe and J. B. Smith have had much experience with graphite base-wads and found them effective in the .357 Magnum revolver. Laboratory tests have indicated that velocities and pressures are erratic when an appreciable amount of grease is present, on the bullet base.

From laboratory tests we are forced to the conclusion that base wads are dangerous, because they increase pressures in the .38 Special, .44 Special and .45 Colt. Up to the normal maximum level (15,000-lbs. pressure) base wads are not needed for controlling bore leading. They are dangerous with extreme loads, because even with those loads which are otherwise normal graphite grease wads have indicated a tendency to increase pressures from 1000 to 2000 pounds. With abnormal loads or abnormal propellants (rifle or shotgun powders) the jump is two or three times greater or even more.

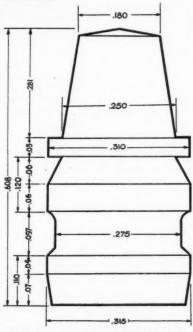
On bullet choice we agree. The B. &. M., 205-grain design is one of the best for a wide range of velocities from low to extreme. For regular use and especially on game we believe such designs as the Ideal-Keith, Bond-Ness and Sharpe are best. We do not like hollow-bases because of their fusing tendency from hot loads and we do not like any bullet-cavity on account of the inconvenience and extra work they impose in casting.

NEW .32-CALIBER BOND BULLET

MORE than a year ago we proposed a .32-caliber, game-and-target, bullet design to the Modern-Bond Corporation for the .32 S. & W. Long, .32 Colt New Police and .32-20-caliber revolvers. The excellent, double-cavity, Bond moulds are now available for this design, which has been given the Bond catalog number of E-314608 for the two .32 Long cartridges, and N-311656 for the .32-20 caliber. Not finding anything better for the purpose, we gave this new bullet the typical, Bond-Ness shape of nose. See the cut for shape and dimensions.

There is a lot of interest now developing in the .32 S. & W. Long, which has been one of our pet hopes for many years. Practical handgun men, like Himmelwright, Haines and Davenport, have advocated this caliber for small-game shooting with bullets of this general type. Target shooters find it as accurate as the

.38 Special, and the recoil and blast are lighter; also factory ammunition, in this center-fire size, costs about a silver-quarter less per box than the .38 Special cartridges cost. Reloaders find it more economical, because the .32 S. & W. Long requires less lead and less powder for a given number of loads. For these reasons, this caliber finds favor among exhibition shooters, trainers and coaches, or revolver instructors, as well as by those previously mentioned.



A newcomer among revolver bullets, the Bond-Ness E-314608 .32 caliber

The new Bond-Ness bullet is offered as an all-around missile for the .32-caliber handgun. It was designed to give maximum shocking power consistent with ranging qualities for field shooting and minimum resistance for permitting high velocities at reasonable pressures. Primarily, however, it had to be as accurate as any target bullet with lighter charges, and for this purpose it cuts wadcutter holes in card paper or tag targets. We have used it in three makes of revolvers for about eight months, during which extensive shooting it has established its capacity for giving fine accuracy, and it has developed no tendency to lead the barrel.

In heavier loads, J. W. Landon drove this bullet, N-311656, at high velocity with his extreme loads in the .32 S. & W. Long case. He judged the velocity of his loads to be between 1200 and 1300 f.-s. at the muzzle. These extreme loads gave satisfactory accuracy. Using 3½ grains Bullseye, or 5 grains Unique he stayed in the 9 ring of the 75-foot rifle target at 50 feet.

Factory ammunition shot in direct comparison gave him twice the spread, which is surprising to me, as in our K-32 S. & W. revolver I have always gotten as good accuracy with standard Kleanbore loads as with our handloads. In his Colt target revolver, Frank Wyman got as good accuracy with the new Bond bullet as with any load he tried.

Our regular load is 2.9 grains of No. 5 pistol powder, because we had bought a good supply from the D.C.M. Our substitute loads of equal accuracy are 3.0 grains Unique and 2.1 grains Bullseye behind this bullet in the .32 S. & W. Long case. Shooting from body-rest at 50 yards, 3.0 grains Unique has given the best individual groups in the .32-caliber, O.M. Colt, outshooting the factory loads, but the average performance of this load is no better or worse than that of either of our other two handloads.

For some reason our K-32 S. & W. groups better with this bullet than with the factory wadcutter loads, which I like to shoot. We tried some heavy loads up to 5 grains Unique behind this 105-grain Bond-Ness bullet, but dropped back to 4.5 grains for better accuracy at 50 yards. So far, with the lighter loads mentioned, our best results at 50 yards have been seven out of nine (5½ inches) in 3½ inches, and eight out of ten (7¼ inches) in 4¾ inches, center to center. The best group with factory loads, during these same tests was five in 9½ inches.

Our K-32 cylinder is 1.55 inches long. The factory cartridge in the .32 S. & W. Long caliber has an overall-length of 1.265 inches. These regular loads have their bullet-base crease 0.26 inch below the case mouth, while the wadcutter loads have deep-seated bullets, flush with the mouth, which moves their bullet creases to a lower position, or 0.43 inch below the case mouth. The length of both these cases, from the rim, is 0.85 inch, which is 0.70 inch short of the cylinder face, and that means a bullet may protrude 0.70 inch from the case mouth. We cast our bullets in a Bond double-cavity mold and crimp the case mouths in the regular groove with our Jordan reloading tool. Since solidhead cases are not available in the .32 S. & W. Long caliber, we do not care to use heavy loads.

Solid-head cases can be had in the .32-20 caliber, and the same bullets can be used with heavy loads in that caliber. The case length is 1.25 inches, which permits a bullet to protrude 0.30 inch from the case mouth without binding the .32-20 cylinder. The overall, cartridge length is 1.524 inches, as per our own factory cartridge and measurement. The bullet crease is 0.32 inch below the mouth of the case.

Since these Bond bullets are .658 inch long, as we make them, they would protrude about 0.297 inch if seated to the

bullet crease. Because the base-edge is very slightly beveled it will clear the bullet crease for slightly deeper seating. This might be desirable for light target loads of 2.0 to 2.5 grains Bullseye, which loads have given us the best accuracy in the .32-20 revolver with any bullet. This bullet has a crimping groove which must be used with maximum loads to hold the bullet from recoil movement.

This crimping will also help burn the powder uniformly, or at least more completely. Let us, then, consider the seating depth arbitrary, or .360 inch in either the .32 S. & W. Long or .32-20 case. At this depth the maximum .32-20 loads would be 3.3 grains Bullseye, 3.5 grains No. 6, 4.8 grains No. 5 and 5.0 grains Unique, or 8.0 grains No. 2400 powder. These loads would give between 900 and 1100 f.-s. In new solid-head cases these loads could be very slightly increased for use in modern, heavy-model .32-20 revolvers.

Extreme loads should be submitted to the powder-maker's laboratory for breakdown test and pressure test before firing. If branded as safe they should only then be fired for accuracy and bore-leading determination. The usual result is the adoption of some lighter and more practical

In the .32 S. & W. Long or .32 Colt New Police with the Bond-Ness bullet seated to normal depth and crimped, the maximum loads are: 4.0 grains Unique, 2.5 grains Bullseye, 2.9 grains No. 5 and 2.4 grains No. 6 powder, with velocities between 750 and 1000 f.-s. Extreme loads are impractical. The only one which gave us even fair accuracy was 4.5 grains Unique in our revolver. In another arm, more closely bored, this same load developed indications of excessive pressures. Use regularly only those medium loads recommended by the powder makers. And then, for the special purpose, weigh every maximum charge and use new cases, or stick to moderate loads.

.22 COLT-FRONTIER D.A. BY SEDGLEY

THIS is a report on my Colt Lightning 41-caliber, converted to .22 Long Rifle, by R. F. Sedgley, Inc.

The gun has a 16-inch pitch, right hand, 6-land rifling, recessed chamber bushings, single action, plain walnut grips, blued finish, rod ejectors, 4½-inch barrel and hand-honed action. The trigger pull is 3½ pounds, rather long, but satisfactory. It has fixed sights, giving Patridge effect. The chambers are very closely bored and burnished.

Extraction is very easy. The breech is fitted as close as will allow clearance, as is space between cylinder and barrel. All chambers align absolutely with barrel. The integral firing-pin strikes bottom of

rim. There is no sign of pressure on any case yet fired. The barrel inside is like a mirror. Blued finish on gun (formerly nickeled) is a most excellent job. Cylinder locks are as tight as any I have ever seen.

The gun weighs 30 ounces and balances exactly as a 5½-inch .45 Colt Single Action. The action is very smooth. The gun handles like the best I have used. To say the least, it is a perfect miniature Single-Action Colt. I never thought the Colt Lightning (in my opinion, the worst gun Colt ever put out) could be made into such a "peach" of a shooting piece. One would have to see it to fully appreciate Sedgley's most excellent job.

After shooting 700 rounds of all makes, including Federal and Clinton ammunition, I have decided on low-pressure Kleanbore for plinking and Remington Hi-Speed, lubricated, H. P., for game work. My practical results with this little .22 Colt-Frontier are:

17 Woodchucks out of 25 shots fired (distance from 25 feet to 40 yards).

21 Red squirrels out of 34 shots fired (distance from 20 feet to 24 paces).

1 Great horned owl, 60 feet, (Hemlock tree). 2 Water snakes 5 and 5'-4" length (25 and 21 feet).

1 Crow (25 feet).

This gun was received from Sedgley July 7, 1934. I have given it a severe test, both single and double-action shooting. It has been perfect in every way. A Winchester barrel was used. Cylinder bushings are so closely chambered that excess grease, or any foreign substance, will prevent seating the cases.

It is not a target arm, but 50% better than any gun I have ever used on the trail, in my opinion. I made a penetration test on four Sears catalogs with this arm and a Stevens, Model No. 35, pistol using Remington Hi-Speed H.P. bullets (both guns); distance 15 feet. Stevens M-35 shot through 2 books and 200 pages of the 3rd. The bullet deformed some, but not mushroomed fully. Sedgley bullet was turned inside out, but penetrated only 2 books and 12 pages. I cannot account for this, the turn of rifling may have something to do with it. The Stevens rifling has one turn in 12 inches.-Gordon C. BOSER.

MISCELLANEOUS

Hollow-Point Gas-Check Bullets. We received from Ivan L. Hicks, R.F.D. No. 1, Cohoes, N. Y., about fifty .30-caliber varmint bullets which he makes from the Squibb gas-check bullets. These are cast fairly hard with a nose cavity about 3/16-inch deep. The altered bullets are 1/16-shorter than the original Squibb bullet and it weighs 154 grains, including the Kampen gas-checks used on them.

These bullets did not ricochet on impact even in flat-angle shooting, but we could get only mediocre accuracy with them. We tried 18 grains No. 80, the load Mr. Hicks recommended, which has given him successful hits up to 175 yards. In our .30-'06 M-70 rifle this load placed 10 shots in 3.95 inches at 100 yards. Later we tried them with other loads, but could not improve the accuracy with 20 grains No. 4227 and 22 to 24 grains No. 4198 powder, using both F. A. No. 70 and R. A. No. 9½ primers. All 10-shot groups were around 4 inches at 100 yards.

These bullets are cast very hard so they will break up on impact. Every one tried for this purpose broke up so well on the ground that only small pieces reached a target placed in back of the impact point. Some fine samples of the 172-grain, Pope bullet and of the 207-grain, 30-caliber bullet were also included in the shipment. All of the Hicks bullets were lubricated with a graphite lubricant.

Small Barrel Inletting Rasp, just like the one mentioned in the September Dope Bag, except in smaller size, was recently received from Frank Mittermeier, 3577 E. Tremont Ave., New York City. For inletting small diameter barrels the new rasp is handier than the larger size. We find these rasps very useful for working out the barrel-groove of gun stocks.

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A recent folder from Mittermeier displays and lists prices on genuine Pearl, Ivory and Stag pistol and revolver stocks. The prices range from \$1.45 for small pocket revolver grips to \$14.00 for large grips like those on H. & R. Sportsman revolvers. The stocks may be had with smooth, plain finish as well as checkered, carved, or engraved. There are more than twenty carving designs to choose from, all of which are illustrated in the folder. The cost of this work is \$3.50 to \$4.50, depending on the design selected.

The Improved 330 Weaver Scope came in just in time to be tried for this Dope Bag. The first sample, received in September, was returned to the factory because of a minor defect. The sample scope seems to have all of the requirements necessary for a good hunting scope. These features are wide latitude in eye position (about 3 to 5½ inches), bright image, good definition and an excellent, tapered, flat-top post reticule.

The long eye-relief offers several distinct advantages. For one thing, it permits low-position mounting forward of the bolt handle on Mauser, Springfield and other rifles with high bolt levers. Also, the wide latitude permits very fast aiming for running shots, because the eye does not have to be in a critically exact place to utilize the full field of view. As we measure it, the field is 31 feet at 100 yards. From our visual check we find the



The Peterson mount is simple, low in outline and though not of the "Q-D" type, is readily demountable

It is full 234X and we can note practically no difference in power when compared with one of the old 330 scopes, which were listed as 3X. The new scope has a larger ocular lens (20-mm.), a brighter image and slightly better definition than the former 330 Weaver. The image is clearer near the edge of the field in the new scope.

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The sample scope has some parallax which is supposed to be removed at the factory. This, however, was not great enough to enlarge our groups while using the scope on an M-70 Winchester in .30-'06 caliber. All of the 100-yard, 10shot groups were 134 to 2 inches with F. A. 1931 ammunition. The only group fired on the 200-yard range measured 4.45 inches. We tried the scope in Albree's Monomount and we found it necessary to use shim metal in order to clamp the scope tight so it would not slide forward from recoil. We learned from Weaver that the reason for some of the scope tubes being slightly under 3/4 inch in diameter is some of them are polished several times. This, however, causes no trouble with the Weaver mounts as they will accommodate scopes slightly smaller than the average 3/4-inch diameter.

The 330 has the distinction of being the only medium-priced scope available that can be used in low position on rifles which have high bolt handles, and without the added expense of bolt-lever alteration. The scope sells for \$27.50, including mount. There are two types of adjustment screws, which are optional. The 330-C has 1/4-minute "click" adjustments, while the 330-S is equipped with screw and lock nut adjustments. This model is also made in 4X, which is called the 440 Weaver. The flat-top post reticule is standard in both models.

New Mount for Hunting Scopes. Since the advent of low-cost scopes with internal adjustments, a number of practical, low-cost, low-position mounts have

magnification to be what the makers claim. been designed. The latest one that we have used is made by Freeman O. Peterson, 1003 Pennsylvania Ave., East Warren, Pa. It is a bridge-type mount that fits in the loading port of bolt-action rifles. Its principal features are low-position mounting, the absence of projections of any kind and the readily-demountable feature, although it is not of the detachable type. The sample tried was on an M-70 Winchester (.30-'06) using a B. & M. Hunter scope with internal adjustments.

The mount base is 31/2 inches long with an anchor ball set in the forward end which fits in a socket made for it in the rearward end of the receiver hood. The rearward end of the mount fits in the opening of the receiver bridge, milled out at the factory to facilitate cartridge-clip loading. The perfect fit of the mount in the clip slot takes the shock of recoil as it rests against the receiver bridge. Two screws, one on either side of the clip slot, are threaded into the receiver for holding the mount down in position. Small retaining pins the mount base when it is removed from the rifle.

The extremely low scope-position is permitted by the unique design and low position of the mount. The B. & M. scope tube barely clears the receiver hood. It clears the receiver bridge by 1/4-inch, which requires altering the M-70 safety. This was neatly done by changing the thumb-lever to operate on the right side of the bolt sleeve instead of on top of it. With the scope and mount removed from the rifle there is nothing left to obstruct the aim with metallic sights or to mar the appearance of the rifle.

Because the mount is a milled fit in the clip-loading slot, removal and replacement of the scope and mount does not affect the zero of the rifle. This practical mount is adaptable for mounting such other scopes as the Noske, Zeiss Zielklein, Unertl and the Weaver line, all of which are obtainable with internal adjustments.

This rifle, scope and mount are one of the finest hunting outfits that we have ever used. Removing and replacing the scope and mount several times did not change the point of impact, and all groups fired were nearly good enough for a match rifle. The biggest 100-yard, 10-shot group measured 2.10 inches, center to center of the widest shots. The smallest of eight 100-yard groups was 1.60 inches with F.A. 1931 ammunition. This load placed 10 shots in 2.35 inches at 200 yards in the only group fired at the longer range. Most of the 100-yard groups had eight or nine shots in 11/4 inches, which is fair enough considering the shooting was with a 21/2X hunting scope with a flat-top post reticule.

An Adjustable-Power Scope is the latest one of the Mossberg line that we have used. They call it their No. 7A. The variable magnification, from 3X to 6X, is controlled by a graduated collar on prevent the screws from dropping out of the scope tube just forward of the en-

Note the low-outline type of safety for the M-70, necessary with a low scope mounting



larged eye piece, which has a 23-mm. ocular lens. Optically, the No. 7A is the best Mossberg scope that we have used.

The theoretical advantage of the adjustable power is that it permits the shooter to have one scope that is suitable for both hunting and target shooting. This adjustability should also be an advantage for all-position shooting, because the 6X would be better for prone and sitting while the 3X could be used to good advantage for the standing position.

The sample scope was sent in with ringtype target mounts, standard-size bases and tap and drill. Included were half-adozen, 1/16-inch, curved plates which are intended to be used under the base blocks in order to raise the front base when a higher one is needed. An assortment of screws of varying lengths was furnished to accommodate one or more of the plates under the base. This is a clever and practical way of increasing the height of scope bases.

The micrometer mounts on the 7A are graduated with 25 white lines, and they have 25 clicks per turn of the adjustment thimbles. The clicks of the mount we used are worth about 1/4 minute. In our test 16 clicks changed the point of impact 4.25 inches at 100 yards. We also found that the point of impact was changed by merely turning the variable magnification adjustment from 3X to 6X. When set for 6X the zero was 1.30 inches to the left of the 3X zero. This, of course, requires two separate adjustment readings. The scope was tried on an M-52 Winchester, and we noted that it could not be moved rearward far enough for proper eye-relief unless the front base is moved back closer to the rear base. The distance between bases is 7.2

No. 2 Marlin Steel Mounts, including taps, drill and bases are available at \$5.00. They can be used on any 34-inch scope that does not have a rib on the tube. This is possible because of the type of sleeve used in the front mount. This should be good news to scope owners who are in need of a good, strong mount that can be used on high-power rifles.

It was good news to us because we have several old die-cast mounts that have been wrecked by using them on .30-'06 rifles, and the Marlin mounts are going to replace them. The mounts fit all standard bases and they sell for \$4.00 without bases, tap and drill. Although the excellent No. 2 Marlin scope and mount complete sells for only a few dollars more than the mounts separately, purchasing, as components, the latter is an economical way out for scope owners who need a dependable scope mount, probably to replace one that has seen better days.

Stoeger Catalog No. 29. This 50-cent supply book has just made a very belated appearance on our desk and we have

turned each one of its 320 pages. Perhaps the edition is exhausted by this time, but our remarks may be applied to all editions. Whether it may be reloading tools for pistol, rifle or shotgun, gunsmith supplies, component parts of guns, or components for reloading which one would have, he can find it in these Stoeger catalogs which list practically all American and many foreign rifles, handguns and shotguns, together with loads for same. All those listed have the current price shown and most of all available models are illustrated. Ballistics from the various ammunition makers are also quoted in this reference book (with index) annually published by A. F. Stoeger, Inc., 507 Fifth Avenue, New York City.

L. L. Bean, Freeport, Maine, has some clothing, footwear and outfits for winter sports which excite one's interest as listed in his 63-page "Fall-1937" catalog. Right now his all-wool shirts, blankets, parkas and socks are in season. For winter slush, Bean's Maine Hunting Shoe is as well and favorably known as is his Maine Hiking Shoe for lighter and drier duty. We have used Bean products in considerable number and variety, and, so far, always with satisfaction.

Muzzle Loading Supplies and repairs for flint or percussion rifles, shotguns and pistols, has been revived, as a service, after 40 years of dormancy. Incomparable "Red" Farris is responsible. He is known more politely as E. M. Farris, Portsmouth, Ohio, where inquiries should be sent in care of the Y.M.C.A.

"Red" goes out and shoots him a rabbit with a Parker percussion gun, and then, in high mood, sends us his list of supplies, as per the title above. The stuff pertains to old muzzle-loading arms in which a new interest is being developed by the National Muzzle Loading Rifle Association, of which the same Farris is secretary. Either the secretary or the association will assist, advise and quote on repairs.

The printing of this pocket-size folder is modern, but the subject is of another age and the descriptive language is quaintly put. It lists such ancient gear as nipples, cappers, wormers, patch cutters, hammer blanks, powder horns and nipple wrenches. You can also have main springs, stock blanks, ramrod blanks, gun flints, pouring spouts and caps, as well as powder, wads, moulds, sights, scopes, glasses, pads and

Remington Slide-Action Rifles are more accurate than commonly believed, says Frederick W. Bekert, Jr., who blames any poor results on lack of shooting ability, rotten trigger pull and the open sight. Using aperture sights on the Remington M-14, he had good results with a number of individual rifles.

This past fall he tried two "Game-master" M-141 rifles in .35 Remington

caliber, with the Lyman No. 56 receiver sight and the 4X Hensoldt hunting scope. He used the R.A., 200-grain, S.P. load. The aperture-sighted outfit put all ten shots in 3½ inches at 100 yards from prone, seven of them in 2 inches. The scope-sighted outfit, fired from an imperfect bench rest, gave a series of five-shot groups, which ranged from 1¾ inches to 2-3/16 inches at 100 yards. The score for five, fired for zero on the small-bore target, was 47 x 50.

The Best Deer Bullet which we have used in .30 caliber is the old U.S.C.Co. 145-grain Hollow Copper Point. It seems to stop deer emphatically at all ranges, because it penetrates from six to eight inches and then becomes a "depth bomb" which shocks the animal off his feet and keeps him there. For years it was issued in a .30-'06 cartridge, having 3000 f.s. m.v.

Now comes the heartening news from Winchester that they will continue to make this former U.S.C.Co. bullet, at least as a component for handloaders. We have recommended it for years for stopping Pennsylvania deer in their tracks and we have not had a failure reported as yet, but praise for it continues to mount.

L. E. Wilson, Cashmere, Washington, fears that some mail failed to reach him after we referred to his excellent reloading-gadget service in the November Dope Bag and used the incorrect initials, "W. E."

Carlton C. Hays, of Hays Brothers, Sardis, Mississippi, has established a purchasing service, and, especially to shooters in the South, he thinks he has something very interesting, economically speaking Tell him just what scope, rifle or accessory you are saving all those pennies for.

The Albree No. 2 Mount for all small internally-adjustable scope sights is now being made to fit the M-52 Winchester, M-19 and M-23 Savage and Stevens Walnut Hill rifles and others with rear blocks, without any further drilling or tapping or cutting.

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The Stith Mount is now being featured with the new 330-S Weaver scope mounted in low-position ahead of the bolt-handle on such rifles as the Springfield, Mauser and old Model-54 Winchester, whose unaltered levers normally interfere with such scope-placement. This is possible on account of the 5-inch eye-relief of the new Weaver scope. This combination is one of the best we have seen for saddle-scabbard employment.

The Marble-Goss receiver sight is now available for all the various M-52 Winchesters now in use. For ordering symbols, the "MG52" is for the standard barrel and slotted receiver, the "MG52H" is for the heavy barrel and slotted receiver, the "MG52B" is for the standard barrel and the receiver with two holes in its left

side, and the "MG52BH" is for the two- | \$1.15 holed receiver with heavy barrel.

"How to Play Scoot" is mentioned as

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a new hand-trap game for scatter-gunners who have sufficient yen (cash for shells and rocks, but not for formal Skeet or Trap) in a free folder distributed by Remington. It gives the rules for Scoot and suggests how to use the Remington Automatic handtrap.

The Amazing Lovell is far better than our very conservative claims in the December Dope Bag would indicate. It has better accuracy and much greater power and the loads of 16.5 to 17.5 grains weight of No. 4198 powder have given us even better results than our old favorite load of 17 grains HiVel No. 3.

All bullets shot through tough and hard 5/16-inch automobile spring leaves, which our former 3,000 f.-s. loads could merely dent. Also these powerful loads put 8 or 9 shots into 11/2-inches at 200 yards, one 10-shot group had fliers which enlarged it to 2.07 inches, center to center, including all wild shots, and those called badly pulled.

Most amazing, however, was the result of the round-up and shooting of all assorted old loads in one group at 100 yards. We found a dozen different .22-Lovell loads, and these twelve, all fired at the same aiming spot, showed an extreme spread of about 11/2 inches, when the 12shot group was measured center to center.

Our improved results with HiVel No. 3. No. 4198 and 4227 powder, were obtained without any alteration of the case, primer or bullets. Several gunsmiths are now altering their Lovell cases for greater powder-capacity, and we have been able to match their improved results in our original Lovell rifle and Winchester-Lovell case with the same bullets and components. Watch the next Dope Bag for the record of details and for the presentation of further developments with this amazing little cartridge.

Handloading Equipment is the title of a free, 18-page, stapled, pocket folder issued by Belding & Mull as a supplement to their B. & M. Handbook. Because some shooters shy at the 50-cent price of the complete book, they have gotten up this abbreviated form for distribution to dealers and to anyone who is willing to spend a stamp.

Zipper Comments are confusing because of their varying implications. Crossman, Sedgley and Lovell apparently believe the .219 Zipper factory ammunition is erratic; that is, neither accurate nor uniform in performance from day to day. Lovell blames this, at least in part, on the physical imperfections of the cartridge. some of his samples having appeared "cockeyed" or out of alignment.

Now, on the other side of this question, we had fairly good and fairly consistent results with our second and third lots of



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Winchester ammunition, especially in the G. & H. Zipper rifle built on the M-70 Winchester. With one of their M-70 rifles Winchester testers had a two-minute extreme spread with their ten-shot groups at all ranges up to 300 yards. Howard H. Wilson of Ithaca, New York, used factory ammunition in a Winchester S.-S. rifle, barreled, chambered and fitted by the Winchester factory. His ten-shot groups at 100 yards averaged just over 11/8 inches for 100 shots. His smallest 10-shot group with the 46-grain factory load was 5/8 inch, center to center.

As to handloads, George Schnerring had best results in the Zipper at moderate velocities, and he implied that heavy loads caused inaccuracy. In our own many Zipper loads we had more good targets with heavy loads than with moderate loads, or an experience quite the opposite. Other experienced experimenters agreed there was too much of the wrong powder in factory loads and in some handloads. I.M.R. 3031 powder, particularly, was blamed.

Accordingly, we tried such loads in our latest Zipper, a Mauser altered and chambered by Hervey Lovell. We used 26.5, 28.5 and 29.0 grains of 3031 behind the Sisk, 55-grain, 50-grain and 40-grain bullets, respectively, which are heavy loads. We also used 26.5 grains 4064 powder behind the 55-grain Sisk-Niedner bullet. These heavy loads put 90% of their bullets in 1.15 to 1.20 inches at 100 yards. Single fliers enlarged each 10-shot group to about 11/2 inches. The worst fliers, or poorest 10-shot group, measured 1.85 inches.

Later, we checked this same Lovell-Mauser with the same Zipper loads at 200 yards. 90% of them went into about 21/2 inches at 200 yards. The smallest 10-shot group was only 2.26 inches, center to center. This is the most accurate Zipper outfit we have seen. Our biggest 10-shot group with it at 200 yards, to date, is 3.05

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inches, center to center. The twist of its 6-groove barrel is one turn in 14 inches; probably a Winchester .220 Swift blank.

Letters to the Dope Bag

Up, Down, and Horizontal

ON page 49 of the November Dope Bag, we published an answer about "Downhill and Uphill" shooting that was highly misleading. Only two members have taken the trouble to call this to our attention. We take this opportunity to apologize to member the company of th ber C.M. who was as right as we were wrong.

In our own shooting we have never noted any change in the trajectory, uphill, downhill, or on the level, which could be blamed on the direction. That is, we would use the same zero or sight adjustment when shooting sharply downhill and uphill as when shoot-ing almost horizontally. The reply, there-fore, was not in keeping with our practical experience, but, apparently, was based on some myth.

For an explanation we delved into bal-listics books and found that for all practical listics books and found that for all practical sporting ranges the trajectory remains rigid regardless of angle. This practical range would mean 100 yards or so with the .22 Long Rifle or between 400 and 600 yards with our sporting and military cartridges ranging between 2000 and 3000 f.-s. m.v.

Ordnance experts illustrate this rigidity or unvarying quality of the practical trajectory by likening it to a bent wire. In other words, imagine the trajectory or curved flight of the bullet to be a bent wire. At once it becomes obvious, that this wire, or the trajectory which it represents, remains the same, from gun source to target or impact end, regard-less of its angle, up or down or nearly level. One end may be raised as in shooting from valley floor to hill top or from a cliff into a lake below, but the trajectory remains rigid, or as unchanging as if it were a bent wire.



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COMPUTING BULLET DROP

IN your Dope Bag article (October RIFLE-MAN) "Dope on 110-grain Hi-Speed," (reply to W.F.S.) apparently you multiply trajectory by four to find the drop. Is this a standard method to calculate how much to hold over on targets beyond the range for which sights are set? We were confused by your reply to W.F.S. as you state in one paragraph the drop between 200 and 300 is 24 inches, and in last paragraph "the indicated drop is 6 inches."

Last Saturday my 17-year-old son had a shot at a bear (standing still) at the estimated range of 400 yards. He was shooting an Enfield .30-'06, Peters 225-grain belted bullet, rifle equipped with Lyman 438 scope, sighted at 200 yards with this ammunition. We had discussed your article, and on this shot (from sitting position) he held the cross hairs 3 feet over and missed. We could not find the bullet, but I believe he shot too high. Later in the day another son (15) had a standing shot at 200 yards—shooting the .30-30 Winchester with Lyman receiver sights set at 200, and sighted in with Peters 180-grain, belted bullet at 200 yards. Shooting from sitting position, with six o'clock hold, he struck the bear above the heart (about an inch above). These boys are good at shorter ranges, but we are not familiar with calculations for holding over at the longer ranges.—J. R. M.

Answer: If you knew the time of flight of your bullet it would be easy to figure drop which is 16 times the square of the time of flight. The formula for height or drop is ½ gt² in which g is the acceleration of gravity, or 32 feet per second. One-half of this is 16 which accounts for that figure. This will give drop in feet. For inches you use 16 times 12, or 192.

It is easy to get the time of flight when air resistance is disregarded, because you merely divide the range in feet by the muzzle velocity in foot seconds. However, air resistance slows the bullet down and you would lose about 50 feet every 100 yards which means a corresponding increase in the actual or net time of flight.

Now disregarding drop and considering trajectory, or the height of the bullet above the point of aim at midrange, this is equal to 4 times the square of the time of flight. It is obvious then that 4 times the height of trajectory would equal the drop. Ballistic figures are not always accurate enough to give more than approximately correct results. Practical results from actual shooting tests are always more definite. However, if you know the midrange trajectory you can get very close by multiplying it by 4.

The midrange trajectory height for the Peters 225-grain belted bullet over 300 yards RUST-FREE GUNS



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is 9.26 inches, and the drop therefore would be 37 inches. That means from the muzzle to 300 yards. If you had your sight set for 200 yards you had already overcome a portiom of that drop and very evidently you shot over your mark if you allowed 3 feet for the drop. At 200 yards the drop would be 4 times 3.68 inches, or about 14 inches. Thus with your 200-yard zero you would have to hold only 23 inches high at 300 yards or about 2 feet high. Therefore I would say you fired a foot high over the top of your aim at 300 yards. If the range was slightly longer other things could account for it. The group is very large at that range and the shot fired may have been one of the high shots in the group. If not, I think it was a very close miss.

not, I think it was a very close miss.

The drop of the 225-grain belted bullet is 72 inches, or 6 feet, over 400 yards, and the drop of the 180-grain bullet is 18½ inches at 200 yards from the muzzle.

VELOCITY AND WEIGHT

I HAVE a custom-built Niedner, .300 Magnum, with 10X Lyman scope, and have been handloading most of my ammunition with the Belding & Mull reloading tool. I have used 172-grain, 180-grain and 150-grain bullets with various loads of No. 15½ powder, getting muzzle velocities, in the 26-inch barrel, of from 3000 to 3250 f.-s.

I am now attempting to get a very fast load, using 120-grain, hollow-point, flat-base bullets. I have used 62 grains No. 15½ powder with 180-grain bullets for about 3000 f.-s. velocity. What would be the best charge to use behind the 120-grain bullet, and what velocity attained with, say, 70 grains? Also what accuracy could be hoped for at 300 to 400 yards? Would like to have immediate answer on this matter.—L. L. S.

Answer: In the .300 Magnum I would use Frankford Arsenal No. 70 primers and either I.M.R. powder No. 15½ or I.M.R. No. 4064 powder. The long-range accuracy with your proposed loads would be problematical as they would depend on personal and individual features of your own particular outfit. The velocities and pressures would also be problematical as I do not believe they have had laboratory tests, and I have no reports on range tests with such loads.

I would say that it would be perfectly safe to start with a ¹/₄-inch air space behind the 120-grain bullet and then build up to the base of the bullet. Perhaps by gradual increase you will find that you can even slightly compress the powder without exceeding safety limits. The .300 Magnum factory loads are made at a higher pressure level than the .30-'06, going up to 52,000 pounds as a limit. Some of these loads, of course, even go higher than that, and at least in the past they have been as high as 55,000 pounds.

Perhaps you cannot increase the velocity greatly unless you find that pressures, or the



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absence of "excessive" indication, permits you to greatly increase the powder charge. Some to greatly increase the powder charge. Some idea of this may be had by taking the well-known 30-'06 case and comparing the velocities obtained with 4064 powder in given charges behind the bullets of different weights. At the low level of 43 grains 4064 there is a difference of 65 f.-s. in favor of the 173-grain boat-tail bullet over the 180-grain flow here have bullet over the 180-grain flow here had a difference of 61. grain flat-base bullet, and a difference of almost the same, or 70 f.-s., between the 110-grain Hi-Speed bullet and the 180-grain bul-At the more normal level of 51 grains 4064 powder there is only 10 f.-s. difference between the 150-grain and 180-grain bullets in favor of the lighter one, but here there is a difference of 85 f.-s. between the 110-grain and 180-grain bullets. With the higher charge of 57 grains 4064 powder there is a difference of 115 f.-s. between the 110-grain and 150-grain bullets.

With the same powder charges that you are now using there should be, then, an increase of approximately 100 f.-s. with the 120-grain bullet in the 300 Magnum. With heavier charges your velocity-guess would be as good as mine, as until you have made the experiment I will not have any basis for guessing, as I would not know how much you will be able to increase your present charges behind the lighter bullet.

PROPER S.-S. ACTION IS STRONGER

THAN THE KRAG

HAVE a high-side-wall Winchester Single-Shot and am going to have it rebarreled for the .30-40. What kind of velocity and accuracy can I expect with the 150-grain Remington Bronze-Point and 110-grain bullets in handloads? I want this rifle for Western deer hunting. I am going to restock it my-self.—C. E. A.

Answer: The high-wall Winchester Single-Shot action in blued finish (originally) is excellent for the .30-40 Krag cartridge and I am sure you will get good results with it. I would suggest that you have it chambered for the 180-grain soft-point bullet which, in the W. C. Co. load, makes an excellent car-tridge. The best ones, perhaps, are the 220-grain Western boat-tail soft-point and the 225-grain Peters belted bullets for accuracy.

For power in your Single-Shot with heavy barrel you will not be limited to Krag loads, but can easily get 2700 f.-s. with the 150-grain Bronze-Point bullet or the U. S. C. Co. 145-grain hollow-copper-point bullet. Either of these should be excellent for your purpose and if you want something cheaper to "blow up" better you could use the .30-30-caliber 150grain Lubaloy open-point bullet at \$1.08 per hundred and for vermin the 110-grain Win-chester make of .30-30-caliber bullets at the chester make of .30-30-caliber bullets at the same price, or the 93-grain soft-point Luger pistol bullets at 90¢ per hundred. If you have the rifle properly breeched and converted it should handle pressures above 50,000 pounds and you could load up to 48,000 pounds. With new cases and carefully prepared loads with selected modern propellants you could duplicate the old .30-706 ballistics and accuracy with such an outfit. listics and accuracy with such an outfit.

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MAKING THE PEEP SAFE

HAVE recently purchased a Winchester 1876 rifle in .40-60 caliber, and on the tang have mounted a vernier mid-range peep sight. This rifle is for collection purposes, but as I am anxious to do some target shooting with it I would like to know if there is any danger of being hit in the eye with the tang sight? The recoil from the .40-60 seems to be rather mild, but due to some publicity given accidents caused by these sights I have been wondering if it is O. K. in this case.

Can one tell whether or not the chamber of a rifle has been worn very much, when the rest of the rifle and barrel appear to be in good condition? Is the use of high-velocity ammunition of the .45-70 type safe in old guns such as the old and worn Winchester Model 1886?

Would the .45-90-300 be more powerful than the .45-70 with 300-grain bullet in the high-velocity loads?-L. B. G.

Answer: The .45.00 with 300-grain bullets have the same velocity as the .40-60 with 210-grain bullets or about 1530 f.-s. The .45-70 is more powerful as the high-velocity load with 300-grain bullet develops 1885 f.-s. The old Model-1886 in .45-70 caliber would be safe to use in worn condition providing it is still serviceable and unaltered. On this rifle, with tang sight I would want at least 3-inches clearance between sight and eye. With the vernier peep sight, which is not as dangerous, I would want 2 inches clearance. I would suggest, therefore, that you put a boot on the butt or a very thick buttplate to lengthen the stock in order to get the proper eye position or eye distance from the rear sight. In most positions the body comes back with the gun, but in shooting uphill the eye is brought closer, and on a quick shot the butt position is not always normal, sometimes making a close peep sight dangerous to the

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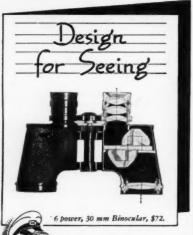
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52 H.B., 48, 17, selected for accuracy, as new \$50.00. 22 Gallery Springfield, \$20.00. Service Springfield, \$30.00. National Match remodeled to sporter, \$42.50. 22 Swift on 20 Savage action, \$30.00. Winchester A-5 scope ½ minute mounts, \$22.50. Above good to excellent. D. H. Mosher, Salem, Oregon.

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For Those Who Forgot



• HERE'S good news for those sportsmen who want to keep pace with shooting developments throughout 1938, but who forgot to take advantage of our popular 3 in 1 gift offer, made last month.

We have persuaded Field and Stream to extend this special combination offer until the end of January. And so for another month we are pleased to offer a year's subscription to Field and Stream in conjunction with Annual Membership, including a 12-months' subscription to the Rifleman—all for only \$3.50.

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Remember this 3 in 1 offer is extended by special arrangements. It positively expires on January 31, 1938. Until that time, the offer is available to present subscribers of both magazines as well as to new subscribers. Even though you have recently renewed you can accept this offer and get your membership-subscription extended another year.

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• IF YOU would like to shoot in some of the matches scheduled for this month you still have time to do so. Targets will be mailed to all competitors whose entries are received before January 15. All fired targets must be returned to the Headquarters of the National Rifle Association on or before the last day of the month in which the event is scheduled.

So there is still time to make your entry in the January "Match of the Month" or in some of the other special events for this month.

MATCH OF THE MONTH FOR JANUARY • • • RIFLE • • •

No. 1-The Prone Metallic Sights 75-Foot Match. 100 Shots.

That's a lot of shooting, but you are permitted to spread the match out over several days. There are place medals well down the list and state champion awards and percentage medals besides (for scores of 990 or better).

. . . PISTOL . . .

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Open to any ".22 caliber pistol or revolver." Here, too, you have an opportunity to win state awards and percentage medals (348) as well as the place awards.

OTHER JANUARY MATCHES

No. 2-Standing Any Sights Free Rifle Match.

Consisting of 50 shots from the N. R. A. standing position at 50 feet. Set triggers, Schuetzen type butt plates and other offhand aids are permitted.

No. 3-Life Members' Rifle Match.

Consisting of 20 shots prone and 20 shots standing, any sights, at 50 feet. Open to life members only.

No. 5-Tyro Slow Fire 20-Yard Pistol Match.

Consisting of 40 shots, slow fire with any ".22 caliber pistol or revolver." Open to tyros only.

GENERAL CONDITIONS

N. R. A. HOME RANGE MATCHES

ELIGIBILITY—All classes of N. R. A. members as well as members of affiliated clubs which are in good standing are eligible to enter the open matches in this program. Special matches are limited to those members who are able to meet the additional eligibility requirements indicated in the conditions for that match. Complete rules for firing postal matches are sent to all competitors with their targets.

CERTIFICATION—Every set of targets returned to the National Rifle Association must be accompanied with a completed certificate signed by two official witnesses (witnesses need not be nominated at the time entry is made) who will certify that all match conditions have been followed.

SUPERVISION—In order to maintain the highest possible standard in all N. R. A. matches, this association reserves the right to send a representative to witness the actual firing of a match or to require any competitors making abnormally high scores to fire substantiating scores in the presence of an N. R. A. witness at some later date.

AWARD OF MEDALS-Unless otherwise provided in the con-

☐ Life Member

ditions of the match, medals will be awarded according to the following schedules:

Schedule "A"-75 Competitors or more-

- 1 Solid Gold Medal
 - 1 Sterling Silver Medal
- 8 Bronze Medals

Schedule "B"-50 to 74 Competitors-

- 1 Gold Filled Medal
- 1 Sterling Silver Medal
- 8 Bronze Medals

Schedule "C"-25 to 49 Competitors-

- 1 Gold Filled Medal
- 1 Sterling Silver Medal
- 3 Bronze Medals

Note: In any case of less than ten entries the event will be cancelled and entry fees refunded.

There will also be awarded in each match a bronze State Champion medal to the highest competitor from each state having five or more entries.

USE THIS ENTRY BLANK FOR ENTERING MATCHES

Circle the Matches National Rifle Association, 816 Barr Building, You Want to Enter Washington, D. C. . FOR JANUARY . . GENTLEMEN: I have put circles around the numbers of the postal matches I would like to enter. Please waste no time in sending my targets. I enclose \$...... to cover my entries at \$1.00 per match (Nos. 5 and 9 are 50c). My Name..... 10 11: 300 City-State..... * Indicates a "Match of the Month."

☐ Annual Member ☐ Club Member

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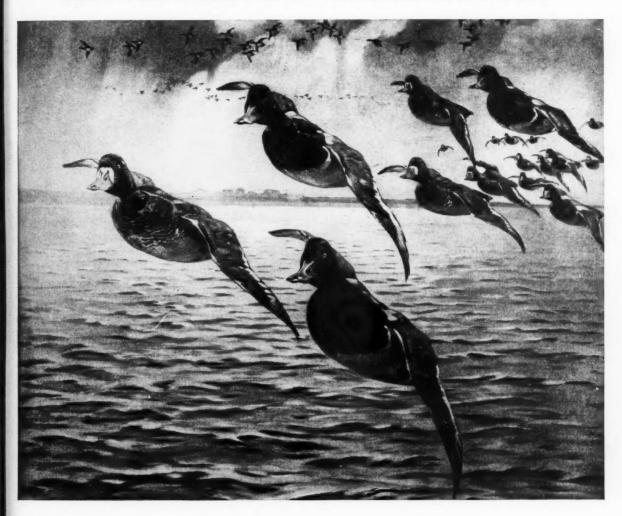
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A tradition as old as America... AN ABUNDANT GAME SUPPLY



Play your part in preserving this tradition for your brothers in sport and for the sportsmen of the future. Always observe the rules of wise conservation.

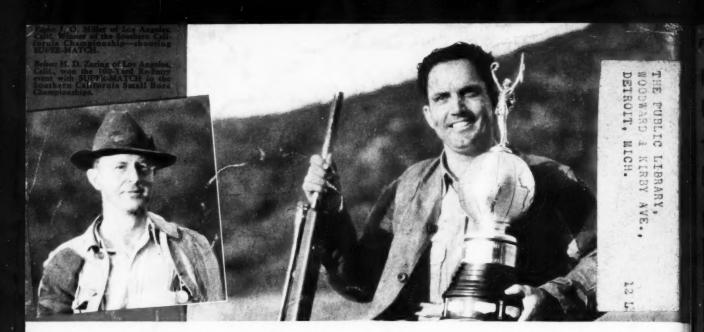
E. I. DU PONT DE NEMOURS & CO., INC. EXPLOSIVES DEPARTMENT

SMOKELESS POWDER DIVISION



WILMINGTON, DELAWARE

Member of the American Wildlife Institute



WON BY J. O. MILLER with SUPER MATO

Competing against some of the best riflemen on the Pacific Coast, J. O. Miller of Los Angeles again won the Southern California Championship, on the range of the Glendale Rifle and Revolver Club, Glendale, Calif., Oct. 30th and 31st. His score of 1277, an aggregate, was made with Western SUPER-MATCH under the most difficult conditions. He also won the 50-Meter Match, score: 398—was third in the Short-Range Aggregate, score: 792—and was fourth in the Long-Range Aggregate, score: 485.

SUPER-MATCH smokeless .22's were used by three of the first five in the hotly contested 100-Yard Re-Entry Match. The winning score of 300—25-X, made by H. D. Zaring of Los Angeles, outranked nine scores of 300. E. C. Hamley, Jr., of Glendale, Calif., placed second with SUPER-MATCH, score: 300—25-X. He also placed second in the Dewar with SUPER-MATCH, score: 397—24-X.



WORLD'S CHAMPION AMMUNITION

Menzen and Hamby of Atlanta Win with SUPER-MATCH

The X-ring accuracy of smokeless SUP MATCH was convincingly demonstrate the Nov. 21st indoor matches of the Ada Rifle Club, Atlanta, Ga.

Shooters using SUPER-MATCH placed in 3-4, with perfect scores, in the 50-Yard & Sights Prone Match, 50 shots, won by E. Menzen, Atlanta, Ga., score: 500 x 500 48-X. Second, Charles G. Hamby, Atland Ga., score: 500 x 500—45-X. Third, Johnsman, Macon, Ga., score: 500 x 500 43-X. Fourth, Mark Cooper, Rome, G score: 500 x 500—41-X. Menzen also withe 50-Yard Iron Sights Match, 20 shotscore: 200 x 200—16-X.

The Three-Position 50-Ft. Iron Sights Ma 30 shots, was won with SUPER-MATCH Charles B. Hamby, score: 271.

Why not give the world's most accurate dependable .22 match ammunition a tria your rifle? You'll wish you had done so soon

